NELAC 2003 Quality Systems Checklist

THIS CHECKLIST IS ONLY A TOOL, NOT THE REQUIREMENTS OF THE 2003 NELAC STANDARDS! IF THERE IS A DISAGREEMENT BETWEEN THIS CHECKLIST AND THE STANDARDS, THE STANDARDS SHALL PREVAIL.

Organization Name: _____

Address (Mailing):_____

Address: _____

(Physical Location):_____

Telephone: _____ Facsimile: _____

E-mail: _____ Other:_____

Personnel Interviewed:

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Audit Location (If different): _____

Audit Date: _____

Audit Organization: _____

Auditor(s): _____ _____

(Signatures): _____ _____

Receipt acknowledgment by Laboratory:_____

No	Reference	Question	Y-N-N/A	Comments
		5.4 - Management Requirements		
1	5.0	Does the laboratory have all items identified in NELAC Chapter 5 Quality Systems available for on-site inspection or data audit?		
2	5.1.1	Does the laboratory demonstrate compliance with more stringent standards if required in a mandated test method or regulation?		
3	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled (i.e., managed, analyzed, and reported) in the same manner as real environmental samples utilizing the same staff, methods as used for routine analysis of that analyte, procedures, equipment, facilities, and frequency of analysis as evidenced by the following points? NOTE: The AA must make a documented determination when exceptions to any of these requirements are applicable on the basis of the laboratory's routine environmental sample composition and SOPs. PT samples are entered into Lab's sample receipt log (Sample tracking may be initiated by laboratory personnel).		
4	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? PT samples are diluted as instructed by PT provider and becomes the environmental sample.		
5	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? PT sample preparation (extraction, digestion) is the same as routine environmental samples.		
6	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? The laboratory has an SOP for the determination of low level samples. (This is to be used when PT falls below the range of laboratory's analytical method.)		

No	Reference	Question	Y-N-N/A	Comments
7	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? PT samples that consist of a set of individual samples (e.g. microbiology PTs) are routine samples.		
8	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? PT samples are not analyzed multiple times unless routine environmental samples are analyzed multiple times.		
9	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? The type, composition, concentration, and frequency of quality control samples analyzed with the PT samples is the same as with routine environmental samples.		
10	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? Initial and continuing calibrations are performed at the same frequency as with routine environmental samples.		
11	2.5	Do the laboratory's management and all analysts ensure that all PT samples are handled in the same manner as real environmental samples? Since the PT Provider requirements for reporting PT Results to the PT Provider are different than the requirements for reporting routine samples, does the laboratory have a documented procedure on how they will meet the PT reporting requirements.		
12	2.5.1.a	Does the laboratory not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which the laboratory seeks accreditation or is accredited?		
13	2.5.1.b	Does the laboratory not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation or is accredited?		

No	Reference	Question	Y-N-N/A	Comments
14	2.5.1.c	Does the laboratory management and staff not communicate with any individual at another laboratory (including intralaboratory communication) concerning PT sample?		
15	2.5.1.d	Does the laboratory management and staff not attempt to obtain the assigned value of any PT sample from the PT provider?		
16	2.5.2	Does the laboratory maintain copies of all written, printed and electronic records resulting from the analysis of any PT sample for 5 years or for as long as is required by the applicable regulatory program, whichever is greater?		
17	5.4.1.1	Is the laboratory, or organization of which it is part, an entity that can be held legally responsible?		
18	5.4.1.2	Does the laboratory carry out its environmental testing activities in such a way as to meet the requirements of the NELAC Standard and to satisfy the needs of the client, the regulatory authorities or organizations providing recognition?		
19	5.4.1.3	Does the laboratory management system cover work carried out in the laboratory's permanent facilities, at sites away from its permanent facilities, and/or in its associated temporary or mobile facilities?		
20	5.4.1.4	If the laboratory is part of an organization performing activities other than environmental testing, are the responsibilities of key personnel in the organization defined in order to identify potential conflicts of interest?		
21	5.4.1.4.a	Where a laboratory is part of a larger organization, are the organizational arrangements such that departments having conflicting interests, such as production, commercial marketing or financing do not adversely influence the laboratory's compliance with the requirements of this Standard?		
22	5.4.1.4.b	Is the laboratory able to demonstrate that it is impartial and that it and its personnel are free from any undue commercial, financial and other pressures which might influence their technical judgment?		
23	5.4.1.5.a	Does the laboratory managerial and technical personnel have the authority and resources needed to carry out their duties and to identify the occurrence of departures from the quality system or from procedures for performing environmental tests, and to initiate actions to prevent or minimize such departures?		
24	5.4.1.4.b	Does the laboratory not engage in any activities that may endanger the trust in its independence of judgment & integrity in relation to its environmental testing activities?		

No	Reference	Question	Y-N-N/A	Comments
25	5.4.1.5.b	Does the laboratory have processes to ensure that its management and personnel are free from any undue internal and external commercial, financial and other pressures and influences that may adversely affect the quality of their work?		
26	5.4.1.5.c	Does the laboratory have policies and procedures to ensure the protection of its clients' confidential information and proprietary rights, including procedures for protecting the electronic storage and transmission of results?		
27	5.4.1.5.d	Does the laboratory avoid involvement in any activities that would diminish confidence in its competence, impartiality, judgment or operational integrity?		
28	5.4.1.5.e	Does the laboratory define the organization and management structure of the laboratory, its place in any parent organization, and the relationships between quality management technical operations and support services?		
29	5.4.1.5.f	Does the laboratory specify the responsibility, authority and interrelationships of all personnel who manage, perform or verify work affecting the quality of the environmental tests and/or calibrations?		
30	5.4.1.5.f	Does documentation include a clear description of the lines of responsibility in the laboratory and are proportioned such that adequate supervision is ensured?		
31	5.4.1.5.g	Does the laboratory provide adequate supervision of environmental testing staff, including trainees, by persons familiar with methods and procedures, purpose of each environmental test, and with the assessment of the environmental test results?		
32	5.4.1.5.h	Does the technical management, which has overall responsibility for the technical operations and the provision of the resources needed, ensure the required quality of laboratory operations?		
33	5.4.1.5.h	Does the technical director(s), however named, certify that personnel with appropriate education and/or technical background perform all tests for which the laboratory is accredited?		
34	5.4.1.5.h	Is the personnel education and technical background documented?		
35	5.4.1.5.h	Do the technical director(s) meet the requirements specified in the Accreditation Process? (see 4.1.1.1)		

No	Reference	Question	Y-N-N/A	Comments
36	5.4.1.5.i	Is a member of staff appointed as quality manager (however named) who, irrespective of other duties and responsibilities appointed to have defined responsibility and authority for ensuring that the quality system is implemented and followed at all times and have direct access to the highest level of management at which decisions are made on laboratory policy or resources?		
37	5.4.1.5.i.1	Does the quality manager (and/or his/her designees) serve as the focal point for QA/QC and be responsible for the oversight and/or review of quality control data?		
38	5.4.1.5.i.2	Does the quality manager (and/or his/her designees) have functions independent from laboratory operations for which they can have quality assurance oversight?		
39	5.4.1.5.i.3	Does the quality manager (and/or his/her designees) able to evaluate data objectively and perform assessments with outside (e.g., managerial) influence?		
40	5.4.1.5.i.4	Does the quality manager (and/or his/her designees) have documented training and/or experience in QA/QC procedures and be knowledgeable in the quality system as defined under NELAC;		
41	5.4.1.5.i.5	Does the quality manager (and/or his/her designees) have a general knowledge of the analytical test methods for which data review is performed?		
42	5.4.1.5.i.6	Does the quality manager (and/or his/her designees) arrange for or conduct internal audits as per 5.4.13 annually? and		
43	5.4.1.5.i.7	Does the quality manager (and/or his/her designees) notify laboratory management of deficiencies in the quality system and monitor corrective action?		
44	5.4.1.5.j	Does the laboratory appoint deputies for key managerial personnel including the technical director(s) and/or quality manager?		
45	5.4.1.5.k	For purposes of qualifying for and maintaining accreditation, does each laboratory participate in a proficiency test program as outlined in Chapter 2?		
46	5.4.2.1	Has the laboratory established, implemented, & maintained a quality system, based on the required elements for NELAC Chapter 5, that is appropriate to the type, range, & volume of environmental testing activities it undertakes?		
47	5.4.2.1	Does the laboratory document its policies, systems, programs, procedures and instructions to the extent necessary to assure the quality of the environmental test results?		

No	Reference	Question	Y-N-N/A	Comments
48	5.4.2.1	Is the quality system documentation communicated to, understood by, available to, & implemented by the appropriate personnel?		
49	5.4.2.2	Are the laboratory's quality system policy and objectives defined in a quality manual?		
50	5.4.2.2	Are the overall objectives documented in a quality policy statement, issued under the authority of the chief executive?		
51	5.4.2.2.a	Does the quality policy include the laboratory management's commitment to good professional practice and to the quality of its environmental testing in servicing its clients? The laboratory shall define and document its policies and objectives for, and its commitment to accepted laboratory practices and quality of testing services.		
52	5.4.2.2.b	Does the quality policy include the management’s statement of the laboratory's standard of service?		
53	5.4.2.2.c	Does the quality policy include the objectives of the quality system? The laboratory management shall ensure that these policies and objectives are documented in a quality manual.		
54	5.4.2.2.d	Does the quality policy include a requirement that all personnel concerned with environmental testing activities within the laboratory familiarize themselves with the quality documentation and implement the policies and procedures in their work; and		
55	5.4.2.2.e	Does the quality policy include the laboratory management's commitment to compliance with this Standard?		
56	5.4.2.3	Does the quality manual, and related quality documentation, state the laboratory's policies and operational procedures established in order to meet the requirements of this Standard?		
57	5.4.2.3	When the laboratory's quality manual does not contain the necessary requirements, are these requirements addressed elsewhere in separate SOP's or policy documents?		
58	5.4.2.3	Does the quality manual list on the title page: Document title? ☐ The laboratory's full name and address? ☐ The name, address (if different from above), and telephone number of individual(s) responsible for the laboratory? ☐ The name of the quality manager (however named); the identification of all major organizational units which are to be covered by this quality manual and the effective date of the version?		

No	Reference	Question	Y-N-N/A	Comments
59	5.4.2.3	Does the quality manual include or make reference to the supporting procedures including technical procedures and does it outline the structure of the documentation used in the quality system?		
60	5.4.2.3.a-c	Does the quality manual and related quality documentation include or reference: A quality policy statement, including objectives and commitments, by top management (see 5.4.2.2)? ☐ The organization and management structure of the laboratory, its place in any parent organization and relevant organizational charts? ☐ The relationship between management, technical operations, support services and the quality system?		
61	5.4.2.3.d	Does the quality manual and related quality documentation include or reference procedures to ensure that all records required under this Chapter are retained, as well as procedures for control and maintenance of documentation through a document control system which ensures that all standard operating procedures (SOPs), manuals, or documents clearly indicate the time period during which the procedure or document was in force?		
62	5.4.2.3.e	Does the quality manual and related quality documentation include or reference job descriptions of key staff and reference to the job descriptions of other staff?		
63	5.4.2.3.f	Does the quality manual and related quality documentation include identification of the laboratory's approved signatories; at a minimum, the title page of the Quality Manual must have the signed and dated concurrence, (with appropriate title(s) of all responsible parties including the quality manager(s), technical director(s), and the agent who is in charge of all laboratory activities such as the laboratory director or laboratory manager?		
64	5.4.2.3.g	Does the quality manual and related quality documentation include or reference the laboratory's procedures for achieving traceability of measurements?		
65	5.4.2.3.h	Does the quality manual and related quality documentation include or reference a list of all test methods under which the laboratory performs its accredited testing?		
66	5.4.2.3.i	Does the quality manual and related quality documentation include or reference mechanisms for ensuring that the laboratory reviews all new work to ensure that it has the appropriate facilities and resources before commencing such work?		

No	Reference	Question	Y-N-N/A	Comments
67	5.4.2.3.j	Does the quality manual and related quality documentation include reference to calibration and/or verification test procedure used?		
68	5.4.2.3.k	Does the quality manual and related quality documentation include or reference procedures for handling submitted samples?		
69	5.4.2.3.l	Does the quality manual and related quality documentation include or reference the major equipment and reference measurement standards used as well as the facilities and services used by the laboratory in conducting tests?		
70	5.4.2.3.m	Does the quality manual and related quality documentation include or make reference to procedures for calibration, verification and maintenance of equipment?		
71	5.4.2.3.n	Does the quality manual and related quality documentation include or make reference to verification practices which may include interlaboratory comparisons, proficiency testing programs, use of reference materials and internal quality control schemes?		
72	5.4.2.3.o	Does the quality manual and related quality documentation include or reference procedures to be followed for feedback and corrective action whenever testing discrepancies are detected, or departures from documented policies and procedures occur?		
73	5.4.2.3.p	Does the quality manual and related quality documentation include or reference the laboratory management arrangements for exceptionally permitting departures from documented policies and procedures or from standard specifications?		
74	5.4.2.3.q	Does the quality manual and related quality documentation include or reference procedures for dealing with complaints?		
75	5.4.2.3.r	Does the quality manual and related quality documentation include or reference procedures for protecting confidentiality (including national security concerns), and proprietary rights?		
76	5.4.2.3.s	Does the quality manual and related quality documentation include or reference procedures for audits and data review?		
77	5.4.2.3.t	Does the quality manual and related quality documentation include or reference processes/procedures for establishing that personnel are adequately experienced in the duties they are expected to carry out and are receiving any needed training?		
78	5.4.2.3.u	Does the quality manual and related quality documentation include or make reference to procedures for reporting analytical results?		
79	5.4.2.3.v	Does the quality manual and related quality documentation include a Table of Contents, and applicable lists of references and glossaries, and appendices?		

No	Reference	Question	Y-N-N/A	Comments
80	5.4.2.4	Does the quality manual define the roles and responsibilities of technical management and the quality manager, including their responsibility for ensuring compliance with this Standard?		
81	5.4.2.5	Does the quality manager maintain the current quality manual?		
82	5.4.2.6	Does the laboratory establish and maintain data integrity procedures in the quality manual, defined in detail?		
83	5.4.2.6	Does the data integrity system include: 1) data integrity training 2) signed data integrity documentation for all laboratory employees 3) in-depth, periodic monitoring of data integrity, and 4) data integrity procedure documentation?		
84	5.4.2.6	Are the data integrity procedures & the associated implementation records properly maintained & made available for assessor review?		
85	5.4.2.6	Are the data integrity procedures annually reviewed & updated by management?		
86	5.4.2.6	Are the data integrity procedures signed & dated by senior management?		
87	5.4.2.6.1	Does laboratory management provide a mechanism for confidential reporting of data integrity issues in their laboratory?		
88	5.4.2.6.2	In instances of ethical concern, does the mechanism include a process whereby laboratory management are to be informed of the need for any further detailed investigation?		
89	5.4.3.1	Does the laboratory have procedures to control all documents that form part of the laboratory's quality system?		
90	5.4.3.2.1	Are all documents issued to personnel in the laboratory as part of the quality system reviewed and approved for use by authorized personnel prior to use?		
91	5.4.3.2.1	Is there an established master list or equivalent document control procedure identifying the current revision status & distribution of documents in the quality system?		
92	5.4.3.2.1	Are the master lists or document control procedures readily available to preclude the use of invalid and/or obsolete documents?		
93	5.4.3.2.2.a	Does the document control procedure(s) adopted ensure that authorized editions of appropriate documents are available at all locations where operations essential to the effective functioning of the laboratory are performed?		

No	Reference	Question	Y-N-N/A	Comments
94	5.4.3.2.2.b	Does the document control procedure(s) adopted ensure that documents are periodically reviewed and, where necessary, revised to ensure continuing suitability and compliance with applicable requirements?		
95	5.4.3.2.2.c	Does the document control procedure(s) adopted ensure that invalid or obsolete documents are promptly removed from all points of issue or use, or otherwise assured against unintended use?		
96	5.4.3.2.2.d	Does the document control procedure(s) adopted ensure that obsolete documents retained for either legal or knowledge presentation purposes are suitable marked?		
97	5.4.3.2.3	Are quality system documents generated by the laboratory uniquely identified and does such identification include the date of issue and/or revision identification, page numbering, the total number of pages or a mark to signify the end of the document, and the issuing authority(ies)?		
98	5.4.3.3.1	Do the designated personnel have access to pertinent background information upon which to base their review and approval?		
99	5.4.3.3.1	Are changes to documents reviewed and approved by the same function that performed the original review, unless specifically designated otherwise?		
100	5.4.3.3.2	Where practicable, is altered or new text identified in the document or the appropriate attachments?		
101	5.4.3.3.3	If the laboratory's documentation control system allows for the amendment of documents by hand, pending the re-issue of the documents, are the procedures and authorities for such amendments defined?		
102	5.4.3.3.3	Are amendments to documents clearly marked, initialed and dated?		
103	5.4.3.3.3	Is a revised document formally re-issued as soon as practicable?		
104	5.4.3.3.4	Are procedures established to describe how changes in documents maintained in computerized systems are made and controlled?		
105	5.4.4.1	Has the laboratory established and maintained procedures for the review of requests, tenders and contracts?		
106	5.4.4.1.a	Do the policies and procedures for reviews leading to a contract for environmental testing ensure that the requirements, including the methods to be used, are adequately defined, documented and understood?		
107	5.4.4.1.b	Do the policies and procedures for reviews leading to a contract for environmental testing and/or calibration ensure that the laboratory has the capability and resources to meet the requirements?		

No	Reference	Question	Y-N-N/A	Comments
108	5.4.4.1.b	Is the current accreditation status of the laboratory reviewed?		
109	5.4.4.1.b	Does the laboratory inform the client of the results of the capability review if it indicates any potential conflict, deficiency, lack of appropriate accreditation status, or inability on the laboratory's part to complete the client's work?		
110	5.4.4.1.c	Do the policies and procedures for reviews leading to a contract for environmental testing ensure that the appropriate environmental test method is selected and capable of meeting the clients' requirements?		
111	5.4.4.1	Are any differences between the request or tender & the contract resolved before any work commences?		
112	5.4.4.2	Are records of reviews, including any significant changes maintained?		
113	5.4.4.2	Are records also maintained of pertinent discussions with a client relating to the client's requirements or the results of the work during the period of execution of the contract? Note: For review of routine and other simple tasks, the date and the identification (e. g. the initials) of the person in the laboratory responsible for carrying out the contracted work are considered adequate. For repetitive routine tasks, the review need be made only at the initial enquiry stage or on granting of the contract for on-going routine work performed under a general agreement with the client, provided that the client's requirements remain unchanged. For new, complex or advanced environmental testing and/or calibration tasks, a more comprehensive record should be maintained. (5.4.4.2).		
114	5.4.4.3	Does the review cover any work that is subcontracted by the laboratory?		
115	5.4.4.4	Is the client informed of any deviation from the contract?		
116	5.4.4.5	If a contract needs to be amended after work has commenced, is the same contract review process repeated?		
117	5.4.4.5	Are any contract amendments communicated to all affected personnel?		
118	5.4.5.1	Does the laboratory submit any subcontract work for testing covered under NELAP only to a laboratory accredited under NELAP for the tests to be performed or one that meets applicable statutory & regulatory requirements for performing the tests & submitting the results of tests performed?		
119	5.4.4.5	If a contract needs to be amended after work has commenced, does the laboratory report any suspensions, revocations, or voluntary withdrawals of accreditation to the client?		

No	Reference	Question	Y-N-N/A	Comments
120	5.4.5.1	When a laboratory subcontracts work, does the laboratory clearly identify in final reports non-NELAP accredited work?		
121	5.4.5.1	Is the laboratory performing the subcontracted work indicated in the final report and non-NELAP accredited work clearly identified?		
122	5.4.5.2	Does the laboratory advise the client of the subcontracting arrangement in writing and, when appropriate, gain the approval of the client, preferably in writing?		
123	5.4.5.3	Is the laboratory responsible to the client for the subcontractor's work, except in the case where the client or a regulatory authority specifies which subcontractor is to be used?		
124	5.4.5.4	Does the laboratory maintain a register of all subcontractors that it uses for environmental tests and maintain a record of the evidence of compliance with 5.4.5.1?		
125	5.4.6.1	Does the laboratory have a policy and procedure(s) for the selection and purchasing of services and supplies it uses that affect the quality of the environmental tests?		
126	5.4.6.1	Do procedures exist for the purchase, reception, & storage of reagents & consumable materials relevant for the environmental tests?		
127	5.4.6.2	Does the laboratory ensure that purchased supplies, reagents and consumable materials that affect quality are not used until they have been inspected or otherwise verified as complying with requirements defined in the methods for the environmental tests concerned?		
128	5.4.6.2	Does the laboratory ensure that supplies & services comply with specified requirements?		
129	5.4.6.2	Does the laboratory maintain records of actions taken to check compliance with these requirements?		
130	5.4.6.3	Do purchasing documents for items affecting the quality of laboratory output contain data describing the services and supplies ordered?		
131	5.4.6.3	Are these purchasing documents reviewed & approved for technical content prior to release?		
132	5.4.6.4	Does the laboratory maintain records of these evaluations and list those (suppliers) approved?		
133	5.4.6.4	Does the laboratory evaluate suppliers of critical consumables, supplies and services which affect the quality of environmental testing?		
134	5.4.7	Does the laboratory afford clients or their representative's cooperation to clarify the client's request and monitor the laboratory's performance in relation to the work performed?		

No	Reference	Question	Y-N-N/A	Comments
135	5.4.8	Does the laboratory have a policy and procedure for the resolution of complaints received from clients or other parties?		
136	5.4.8	Does the laboratory maintain records of all such complaints and of the investigations & actions taken by the laboratory?		
137	5.4.9.1	Does the laboratory have a policy and procedures that are implemented when any aspect of its environmental testing, or the results of this work, does not conform to its own procedures or the agreed requirements of the client?		
138	5.4.9.1	Do the policy and procedures ensure that the responsibilities and authorities for the management of nonconforming work are designated and actions (including halting of work and withholding of test reports, as necessary) are defined and taken when nonconforming work is identified?		
139	5.4.9.1.a	Do the policy and procedures for nonconforming work ensure that the responsibilities and authorities for the management of nonconforming work are designated and actions (including halting of work and withholding of test reports and calibration certificates, as necessary) are defined and taken when nonconforming work is identified?		
140	5.4.9.1.b	Do the policy and procedures for nonconforming work ensure that an evaluation of the significance of the nonconforming work is made?		
141	5.4.9.1.c	Do the policy and procedures for nonconforming work ensure that corrective actions are taken immediately, together with any decision about the acceptability of the nonconforming work?		
142	5.4.9.1.d	Do the policy and procedures for nonconforming work ensure that where the data quality is or may be impacted, the client is notified and the work may be recalled?		
143	5.4.9.1.e	Do the policy and procedures for nonconforming work ensure that the responsibility for authorizing the resumption of work is defined?		
144	5.4.9.2	Where the evaluation indicates that the nonconforming work could recur or that there is doubt about the compliance of the laboratory's operations with its own policies and procedures, are the corrective action procedures given in 5.4.10 promptly followed?		
145	5.4.10.1	Does the laboratory have an established policy and procedure and designated appropriate authorities for implementing corrective action when nonconforming work or departures from the policies and procedures in the quality system or technical operations have been identified?		
146	5.4.10.2	Does the procedure for corrective action start with an investigation to determine the root cause(s) of the problem?		

No	Reference	Question	Y-N-N/A	Comments
147	5.4.10.3	Where corrective action is needed, does the laboratory identify potential corrective actions?		
148	5.4.10.3	Does the laboratory select and implement the action(s) most likely to eliminate the problem and prevent recurrence?		
149	5.4.10.3	Are corrective actions made to a degree appropriate to the magnitude and the risk of the problem?		
150	5.4.10.3	Does the laboratory document and implement any required changes resulting from corrective action investigations?		
151	5.4.10.4	Does the laboratory monitor the results to ensure that the corrective actions taken are effective?		
152	5.4.10.5	Where the identification of nonconformances or departures casts doubts on the laboratory's compliance with its own policies and procedures, or on its compliance with this Standard, does the laboratory ensure that the appropriate areas of activity are audited in accordance with 5.4.13 as soon as possible?		
153	5.4.10.6.a	In addition to providing acceptance criteria and specific protocols for corrective actions in the Method SOPs (see 5.5.4.1.1), does the laboratory implement general procedures to be followed to determine when departures from documented policies, procedures and quality control have occurred?		
154	5.4.10.6.a.1-3	Do these corrective action procedures include the following: ☐ Identify the individual(s) responsible for assessing which QC data type? ☐ Identify individual(s) responsible for initiating and/or recommending corrective actions? ☐ Define how the analyst shall treat a data set if the associated QC measurement is unacceptable? ☐ Specify how out-of-control situations & subsequent corrective actions are to be documented? ☐ Specify procedures for management & the QA officer to review corrective action reports?		
155	5.4.10.6.b	To the extent possible, are sample test results reported only if QC measures are acceptable?		
156	5.4.10.6.b	Does the laboratory report samples with the appropriate laboratory defined data qualifier(s) when a quality control measure associated with that sample analysis was found to be out of control and the data is to be reported?		
157	5.4.11.1	Are needed improvements and potential sources of nonconformance, either technical or concerning the quality system, identified?		

No	Reference	Question	Y-N-N/A	Comments
158	5.4.11.1	If preventative action is required, are action plans developed, implemented, & monitored to reduce the occurrence of nonconformances & to take advantage of opportunities for improvement?		
159	5.4.11.2	Do procedures for preventive actions include the initiation of such actions and application of controls to ensure that they are effective?		
160	5.4.12	Does the laboratory retain all original observations, calculations and derived data, calibration records and a copy of the test report for a minimum of five years?		
161	5.4.12	Does the laboratory maintain a record system to suit its particular circumstances and comply with any applicable regulations?		
162	5.4.12	Does the record system produce unequivocal, accurate records which document all laboratory activities?		
163	5.4.12	If the laboratory's clients specify that a sample will be used for evidentiary purposes, does the laboratory have a written SOP for how it will carry out legal chain of custody (for example, ASTM D 4840- 95 and Manual for the Certification of Laboratories Analyzing Drinking Water, March 1997, Appendix A)?		
164	5.4.12.1.1	Does the laboratory establish and maintain procedures for identification, collection, indexing, access, filing, storage, maintenance and disposal of quality and technical records?		
165	5.4.12.1.1	Do quality records include reports from internal audits and management reviews as well as records of corrective and preventive actions? (Records may be in any media, such as hard copy or electronic media).		
166	5.4.12.1.2	Are all records legible?		
167	5.4.12.1.2	Are all records retained in such a way that they are readily retrievable?		
168	5.4.12.1.2	Are all records stored in facilities that provide a suitable environment to prevent damage or deterioration and to prevent loss?		
169	5.4.12.1.2	Has retention times of records been established?		
170	5.4.12.1.3	Are all records held secure and in confidence?		
171	5.4.12.1.4	Does the laboratory have procedures to protect and back-up records stored electronically and to prevent unauthorized access to or amendment of records stored electronically?		
172	5.4.12.1.5	Does the record keeping system allow historical reconstruction of all laboratory activities that produced the analytical data?		

No	Reference	Question	Y-N-N/A	Comments
173	5.4.12.1.5	Is the history of the sample readily understood through the documentation (including interlaboratory transfers of samples and/or extracts?		
174	5.4.12.1.5.a	Do the records include the identity of personnel involved in sampling, sample receipt, preparation, or testing?		
175	5.4.12.1.5.b	Is all information relating to the laboratory facilities equipment, analytical test methods, and related laboratory activities, such as sample receipt, sample preparation, or data verification documented?		
176	5.4.12.1.5.c	Does the record keeping system facilitate the retrieval of all working files and archived records for inspection and verification purposes, e.g., set format for naming electronic files?		
177	5.4.12.1.5.d	Are all changes to records signed or initialed by responsible staff?		
178	5.4.12.1.5.d	Is the reason for the signature or initials clearly indicated in the records such as “sampled by,” “prepared by,” or “reviewed by”?		
179	5.4.12.1.5.e	Are all generated data except those that are generated by automated data collection systems, recorded directly, promptly and legibly in permanent ink?		
180	5.4.12.1.5.f	Are entries in records changed so as not to be obliterated by methods such as erasures, overwritten files or markings?		
181	5.4.12.1.5.f	Are all corrections to record-keeping errors made by one line marked through the error?		
182	5.4.12.1.5.f	Is the individual making the change to electronically maintained records identified?		
183	5.4.12.1.5.f	Does the individual making the correction sign (or initial) and date the correction?		
184	5.4.12.1.5.f	Are entries to electronically maintained records changed so as to not erase or overwrite the files?		
185	5.4.12.2.1	Does the laboratory retain records of original observations, derived data and sufficient information to establish an audit trail, calibration records, staff records and a copy of each test report for a defined period?		
186	5.4.12.2.1	Do the records for each environmental test contain sufficient information to facilitate identification of factors affecting the uncertainty and enable the environmental test to be repeated under conditions as close as possible to the original?		
187	5.4.12.2.1	Do the records include identity of personnel responsible for the sampling, performance of the environmental test, & checking the results?		

No	Reference	Question	Y-N-N/A	Comments
188	5.4.12.2.2	Are observations, data and calculations identifiable to the specific task?		
189	5.4.12.2.2	Are observations, data and calculations recorded at the time they are made?		
190	5.4.12.2.3	When mistakes occur in records, is each mistake crossed out, not erased, made illegible or deleted, and is the correct value entered alongside?		
191	5.4.12.2.3	Does the laboratory take equivalent measures to avoid loss or change of original data in records stored electronically?		
192	5.4.12.2.3	When corrections are due to reasons other than transcription errors, does the laboratory document the reason for the correction?		
193	5.4.12.2.3	Are all alterations to records signed or initialed by the person making the correction?		
194	5.4.12.2.4.a	Are all records (including those pertaining to test equipment), certificates and reports safely stored, held secure and in confidence to the client?		
195	5.4.12.2.4.a	Are all NELAP-related records available to the accrediting authority?		
196	5.4.12.2.4.b	Are all records, including those specified in 5.4.12.2.5 retained for a minimum of five years from generation of the last entry in the records?		
197	5.4.12.2.4.b	Is all information necessary for the historical reconstruction of data maintained by the laboratory?		
198	5.4.12.2.4.b	Are records which are stored only on electronic media supported by the hardware and software necessary for their retrieval?		
199	5.4.12.2.4.c	Do records that are stored or generated by computers or personal computers have hard copy or write-protected backup copies?		
200	5.4.12.2.4.d	Has the laboratory established a record management system for control of laboratory notebooks, instrument logbooks, standards logbooks, and records for data reduction, validation, storage and reporting?		
201	5.4.12.2.4.e	Is access to archived information documented with an access log?		
202	5.4.12.2.4.e	Are records protected against fire, theft, loss, environmental deterioration, vermin and, in the case of electronic records, electronic or magnetic sources?		
203	5.4.12.2.4.f	Does the laboratory have a plan to ensure that the records are maintained or transferred according to the clients' instructions (see 4.1.8.e) in the event that a laboratory transfers ownership or goes out of business? (In cases of bankruptcy, appropriate regulatory and state legal requirements concerning laboratory records must be followed.)		

No	Reference	Question	Y-N-N/A	Comments
204	5.4.12.2.5.1.a	Does the laboratory maintain a record of all procedures to which a sample is subjected while in the possession of the laboratory pertaining to sample preservation including appropriateness of sample container and compliance with holding time requirement?		
205	5.4.12.2.5.1.b	Does the laboratory maintain a record of all procedures to which a sample is subjected while in the possession of the laboratory pertaining to sample identification, receipt, acceptance or rejection and log-in?		
206	5.4.12.2.5.1.c	Does the laboratory maintain a record of all procedures to which a sample is subjected while in the possession of the laboratory pertaining to sample storage and tracking including shipping receipts, sample transmittal forms, (chain of custody form)?		
207	5.4.12.2.5.1.d	Does the laboratory maintain a record of all procedures to which a sample is subjected while in the possession of the laboratory pertaining to the receipt and retention of samples, including all provisions necessary to protect the integrity of samples?		
208	5.4.12.2.5.2.a-h	In addition to documenting all the above-mentioned activities, are the following retained: ☐ All original raw data, whether hard copy or electronic, for calibrations, samples and quality control measures, including analysts' work sheets and data output records? (chromatograms, strip charts, and other instrument response readout records); ☐ A written description or reference to the specific test method used which includes a description of the specific computational steps used to translate parametric observations into a reportable analytical value? ☐ Copies of final reports? ☐ Archived SOPs? ☐ Correspondence relating to laboratory activities for a specific project? ☐ All corrective action reports, audits and audit responses? ☐ Proficiency test results and raw data? and, ☐ Results of data review, verification, and cross-checking procedures?		

No	Reference	Question	Y-N-N/A	Comments
209	5.4.12.2.5.3.a-n	Do analytical records include the following essential information associated with an analysis, such as strip charts, tabular printouts, computer data files, analytical notebooks, and run logs ☐ Laboratory sample ID code? ☐ Date of analysis and time of analysis is required if the holding time is 72 hours or less or when time critical steps are included in the analysis, e.g., extractions, and incubations? ☐ Instrumentation identification and instrument operating conditions/parameters (or reference to such data)? ☐ Analysis type? ☐ All manual calculations, e.g., manual integrations? and, ☐ Analyst's or operator's initials/signature? ☐ Sample preparation including cleanup, separation protocols, incubation periods or subculture, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents? ☐ Sample analysis? ☐ Standard and reagent origin, receipt, preparation, and use? ☐ Calibration criteria, frequency and acceptance criteria? ☐ Data and statistical calculations, review, confirmation, interpretation, assessment, and reporting conventions? ☐ Quality control protocols and assessment? ☐ Electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries? ☐ Method performance criteria including expected quality control requirements?		
210	5.4.12.2.5.4.a-c	Are the following administrative records maintained; Personnel qualifications, experience and training records and Records of demonstration of capability for each analyst and A log of names, initials and signatures for all individuals who are responsible for signing or initialing any laboratory record?		
211	5.4.13.1	Does the laboratory periodically, in accordance with a predetermined schedule and procedure, and at least annually, conduct internal audits of its activities to verify that its operations continue to comply with the requirements of the quality system and this Standard?		
212	5.4.13.1	Does the internal audit program address all elements of the quality, including the environmental testing activities?		

No	Reference	Question	Y-N-N/A	Comments
213	5.4.13.2	When audit findings cast doubt on the effectiveness of the operations or on the correctness or validity of the laboratory's environmental test results, does the laboratory take timely corrective action, and notify clients in writing if investigations show that the laboratory results may have been affected?		
214	5.4.13.2	Does the laboratory specify in its Quality Manual the time frame for notifying a client of events that cast doubt on the validity of the test results?		
215	5.4.13.1	Are such audits carried out by trained and qualified personnel who are, wherever resources permit, independent of the activity to be audited?		
216	5.4.13.1	Do personnel not audit their own activities except when it can be demonstrated that an effective audit will be carried out?		
217	5.4.13.1	Is it the responsibility of the quality manager to plan and organize audits as required by the schedule and requested by management?		
218	5.4.13.2	Does the laboratory notify clients promptly, in writing, of any event such as the identification of defective measuring or test equipment that casts doubt on the validity of results given in any test report or test certificate or amendment to a report or certificate?		
219	5.4.13.3	Is the area of activity audited, the audit findings and corrective actions that arise from them recorded?		
220	5.4.13.3	Does the laboratory management ensure that corrective actions are discharged within the appropriate & agreed time frame as indicated in the quality manual and/or SOP's?		
221	5.4.13.4	Do follow-up audit activities verify and record the implementation and effectiveness of the corrective action taken?		
222	5.4.14.1	In accordance with a predetermined schedule and procedure, does the laboratory’s executive management periodically and at least annually conduct a review of the laboratory's quality system and environmental testing activities to ensure their continuing suitability and effectiveness, and introduce necessary changes or improvements?		

No	Reference	Question	Y-N-N/A	Comments
223	5.4.14.1.a-j	Does the management review take account of: ☐ The suitability of policies and procedures? ☐ Reports from managerial and supervisory personnel? ☐ The outcome of recent internal audits? ☐ Corrective and preventive actions? ☐ Assessments by external bodies? ☐ The results of interlaboratory comparisons or proficiency tests? ☐ Changes in the volume and type of the work? ☐ Client feedback? ☐ Complaints? ☐ Other relevant factors, such as quality control activities, resources and staff training?		
224	5.4.14.2	Does management ensure that those actions are carried out within an appropriate and agreed timescale?		
225	5.4.14.2	Does the laboratory have a procedure for review by management and does it maintain records of review findings and actions?		
226	5.4.14.2	Are findings from management reviews and the actions that arise from them recorded?		
227	5.4.15	Does the laboratory, as part of their overall internal auditing program, insure that a review is conducted with respect to any evidence of inappropriate actions or vulnerabilities related to data integrity?		
228	5.4.15	Is discovery of potential issues handled in a confidential manner until such time as a follow up evaluation, full investigation, or other appropriate actions have been completed and the issues clarified?		
229	5.4.15	Is all documentation of these investigation and actions taken maintained for at least five years?		
230	5.4.15	Does documentation of the investigations include any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients?		
231	5.4.15	Are all investigations that result in finding of inappropriate activity documented?		

No	Reference	Question	Y-N-N/A	Comments
		5.5 - Technical Requirements		
232	5.5.1.1.a-g	Does the laboratory determine correctness and reliability of the environmental tests include contributions from: ☐ Human factors (5.5.2) ☐ Accommodation and environmental conditions (5.5.3)? ☐ Environmental test methods and method validation (5.5.4)? ☐ Equipment (5.5.5)? ☐ Measurement traceability (5.5.6)? ☐ Sampling (5.5.7)? ☐ The handling of samples (5.5.8)?		
233	5.5.1.2	Does the laboratory take account of the factors that contribute to the total uncertainty of measurement in developing environmental test methods and procedures, in the training and qualification of personnel, and in the selection and calibration of the equipment it uses?		
234	5.5.2.1	Does laboratory management ensure the competence of all who operate specific equipment, perform environmental tests, evaluate results, and sign test reports?		
235	5.5.2.1	When using staff that are undergoing training, is appropriate supervision provided?		
236	5.5.2.1	Are personnel performing specific tasks qualified on the basis of appropriate education, training, experience and/or demonstrated skills, as required?		
237	5.5.2.1	Does the laboratory have sufficient personnel with the necessary education, training, technical knowledge and experience for their assigned functions?		
238	5.5.2.1	Are all personnel responsible for complying with all quality assurance/quality control requirements that pertain to their organizational/ technical function?		
239	5.5.2.1	Does each technical staff member have a combination of experience and education to adequately demonstrate a specific knowledge of their particular function and a general knowledge of laboratory operations, test methods, quality assurance/quality control procedures and records management?		
240	5.5.2.2	Does the management formulate goals with respect to the education, training and skills of the laboratory personnel?		
241	5.5.2.2	Does the laboratory have a policy and procedures for identifying training needs and providing training of personnel?		
242	5.5.2.2	Is the training program relevant to the present and anticipated tasks of the laboratory?		

No	Reference	Question	Y-N-N/A	Comments
243	5.5.2.3	Does the laboratory use personnel who are employed by, or under contract to, the laboratory?		
244	5.5.2.3	Where contracted and additional technical and key support personnel are used, does the laboratory ensure that such personnel are supervised and competent and that they work in accordance with the laboratory's quality system?		
245	5.5.2.4	Does the laboratory maintain current job descriptions for all personnel who manage, perform, or verify work affecting the quality of the environmental tests?		
246	5.5.2.5	Does management authorize specific personnel to perform particular types of sampling, environmental testing, to issue test reports, to give opinions and interpretations and to operate particular types of equipment?		
247	5.5.2.5	Does the laboratory maintain records of the relevant authorization(s), competence, educational and professional qualifications, training, skills and experience of all technical personnel, including contracted personnel?		
248	5.5.2.5	Are the records readily available and do they include the date on which authorization and/or competence is confirmed?		
249	5.5.2.5	Do the records include demonstrated proficiency for each laboratory test method, such as the criteria outlined in 5.5.4.2.2 for chemical testing?		
250	5.5.2.5	Are records on the relevant qualifications, training, skills and experience of the technical personnel maintained by the laboratory, including records on demonstrated proficiency for each laboratory method, such as the criteria outlined in 5.5.4.2.2 for chemical testing?		
251	5.5.2.6.a	Does laboratory management define the minimal level of qualification, experience and skills necessary for all positions in the laboratory. In addition to education and/or experience, basic laboratory skills such as using a balance, colony counting, aseptic or quantitative techniques shall be considered?		
252	5.5.2.6.b	Does laboratory management ensure that all technical laboratory staff have demonstrated capability in the activities for which they are responsible? Such demonstration shall be documented. (See Appendix C);		
253	5.5.2.6.c.1	Does laboratory management maintain documentation on file that demonstrates that each employee has read, understood, and is using the latest version of the laboratory's in-house quality documentation, which relates to his/her job responsibilities?		

No	Reference	Question	Y-N-N/A	Comments
254	5.5.2.6.c.2	Does laboratory management provide for and document training courses or workshops on specific equipment, analytical techniques or laboratory procedures?		
255	5.5.2.6.c.3	Does laboratory management ensure that the training file contains a certification that technical personnel have read, understood and agreed to perform the most recent version of the test method (the approved method or standard operating procedure as defined by the laboratory document control system, 5.4.2.3.d) and documentation of continued proficiency by at least one of the following once per year: ☐ Acceptable performance of a blind sample (single blind to the analyst)? ☐ An initial measurement system evaluation or another demonstration of capability? ☐ At least four consecutive laboratory control samples with acceptable levels of precision and accuracy? ☐ If these cannot be performed, analysis of authentic samples with results statistically indistinguishable from those obtained by another trained analyst?		
256	5.5.2.6.d	Does laboratory management document all analytical and operational activities of the laboratory?		
257	5.5.2.6.e	Does laboratory management supervise all personnel employed by the laboratory?		
258	5.5.2.6.f	Does laboratory management ensure that all sample acceptance criteria (Section 5.5.8) are verified and that samples are logged into the sample tracking system and properly labeled and stored?		
259	5.5.2.6.g	Does laboratory management document the quality of all data reported?		
260	5.5.2.7	Is data integrity training provided as a formal part of new employee is it provided on an annual basis for all current employees?		
261	5.5.2.7	Are topics covered documented in writing and provided to all trainees?		
262	5.5.2.7	Do key topics covered during training include organizational mission and its relationship to the critical need for honesty and full disclosure in all analytical reporting, how and when to report data integrity issues, and record keeping?		
263	5.5.2.7	Are employees required to understand that any infractions of the laboratory data integrity procedures will result in a detailed investigation that could lead to very serious consequences including immediate termination, debarment or civil/criminal prosecution?		

No	Reference	Question	Y-N-N/A	Comments
264	5.5.2.7	Does the initial data integrity training and the annual refresher training have a signature attendance sheet or other form of documentation that demonstrates all staff have participated and understand their obligations related to data integrity?		
265	5.5.2.7	Do senior managers acknowledge their support of these procedures by: ☐ Upholding the spirit and intent of the organization's data integrity procedures? ☐ Effectively implementing the specific requirements of the procedures?		
266	5.5.2.7	Are specific examples of breaches of ethical behavior discussed including improper data manipulations, adjustments of instrument time clocks, and inappropriate changes in concentrations of standards?		
267	5.5.2.7	Does training include discussion regarding all data integrity procedures, data integrity training documentation, in-depth data monitoring and data integrity procedure documentation?		
268	5.5.2.7	Does data integrity training require emphasis on the importance of proper written narration on the part of the analyst with respect to those cases where analytical data may be useful, but are in one sense or another partially deficient?		
269	5.5.3.1	Are laboratory facilities for environmental testing, including but not limited to energy sources, lighting and environmental conditions, such as to facilitate correct performance of the environmental tests?		
270	5.5.3.1	Does the laboratory ensure that the environmental conditions do not invalidate the results or adversely affect the required quality of any measurement?		
271	5.5.3.1	Is particular care taken when sampling and environmental tests are undertaken at sites other than a permanent laboratory facility?		
272	5.5.3.1	Are the technical requirements for accommodation and environmental conditions that can affect the results of environmental tests documented?		
273	5.5.3.2	Is due attention paid, for example, to biological sterility, dust, electromagnetic disturbances, radiation, humidity, electrical supply, temperature, and sound and vibration levels, as appropriate to the technical activities concerned?		
274	5.5.3.2	Are environmental tests and calibrations stopped when the environmental conditions jeopardize the results of the environmental tests?		

No	Reference	Question	Y-N-N/A	Comments
275	5.5.3.2	In instances where monitoring or control of any of the mentioned items is specified in a test method or by regulation, does the laboratory meet and document adherence to the laboratory facility requirements?		
276	5.5.3.2	Does the laboratory monitor, control and record environmental conditions as required by the relevant specifications, methods and procedures or where they influence the quality of the results?		
277	5.5.3.3	Is there effective separation between neighboring areas in which there are incompatible activities including culture handling or incubation areas and volatile organic chemicals handling areas?		
278	5.5.3.3	Are measures taken to prevent cross-contamination?		
279	5.5.3.4	Does the laboratory determine the extent of control based on its particular circumstances?		
280	5.5.3.4	Is access to and use of areas affecting the quality of the environmental tests controlled?		
281	5.5.3.5	Are measures taken to ensure good housekeeping in the laboratory?		
282	5.5.3.5	Are special procedures prepared where necessary?		
283	5.5.3.6.a-e	Do work areas provide the following: ☐ Access and entryways to the laboratory? ☐ Sample receipt area(s)? ☐ Sample storage area(s)? ☐ Chemical and waste storage area(s)? ☐ Data handling and storage area(s)?		
284	5.5.4.1	Does the laboratory use appropriate methods and procedures for all environmental tests and/or calibrations within its scope?		
285	5.5.4.1	Does the laboratory have instructions on the use and operation of all relevant equipment, and on the handling and preparation of samples where the absence of such instructions could jeopardize the results of environmental tests?		
286	5.5.4.1	Are all instructions, standards, manuals and reference data relevant to the work of the laboratory kept up to date and made readily available to personnel?		
287	5.5.4.1	Do deviations from environmental test methods occur only if the deviation has been documented, technically justified, authorized, and accepted by the client?		
288	5.5.4.1.1	Does the laboratory maintain SOPs that accurately reflect all phases of current laboratory activities such as assessing data integrity, corrective actions, handling customer complaints, and all test methods?		

No	Reference	Question	Y-N-N/A	Comments
289	5.5.4.1.1.b	If the test methods are copies of published methods are any changes or selected options in the methods are documented and included in the methods manual?		
290	5.5.4.1.1.c	Are copies of all SOPs accessible to all personnel?		
291	5.5.4.1.1.d	Are the SOPs organized?		
292	5.5.4.1.1.e	Does each SOP clearly indicate the effective date of the document, the revision number and the signature(s) of the approving authority?		
293	5.5.4.1.1.f	Do the laboratory SOPs contain sufficient information to perform the tests?		
294	5.5.4.1.1.f	If the documents cannot be used as written, are the documents supplemented or rewritten as internal procedures?		
295	5.5.4.1.1.f	Are changes, including the use of selected option documented and included in the laboratory's methods manual?		
296	5.5.4.1.2.a	Does the laboratory have and maintain an in-house methods manual(s) for each accredited analyte or test method?		
297	5.5.4.1.2.b	Does the laboratory clearly indicate in its methods manual any modifications made to the referenced test method and describe any changes or clarifications where the referenced test method is ambiguous or provides insufficient detail?		

No	Reference	Question	Y-N-N/A	Comments
298	5.5.4.1.2.b.1-23	Does each test method include or reference where applicable: ☐ Identification of the test method? ☐ Applicable matrix or matrices? ☐ Detection limit? ☐ Scope and application, including components to be analyzed? ☐ Summary of the test method? ☐ Definitions? ☐ Interferences? ☐ Safety? ☐ Equipment and supplies? ☐ Reagents and standards? ☐ Sample collection, preservation, shipment and storage? ☐ Quality control? ☐ Calibration and standardization? ☐ Procedure? ☐ Data analysis and calculations? ☐ Method performance? ☐ Pollution prevention? ☐ Data assessment and acceptance criteria for quality control measures? ☐ Corrective actions for out-of-control data? ☐ Contingencies for handling out-of-control or unacceptable data? ☐ Waste management? ☐ References? ☐ Any tables, diagrams, flowcharts and validation data?		
299	5.5.4.2	Does the laboratory use methods for environmental testing, including methods for sampling, which meet the needs of the client and which are appropriate for the environmental tests it undertakes?		
300	5.5.4.2.1.a	Are methods published in international, regional or national standards used if possible?		
301	5.5.4.2.1.a	Does the laboratory ensure that it uses the latest valid edition of a standard unless it is not appropriate or possible to do so?		
302	5.5.4.2.1.a	When necessary, is the standard supplemented with additional details to ensure consistent application?		
303	5.5.4.2.1.b	When the use of specific methods for a sample analysis are mandated or requested, are only those methods used?		
304	5.5.4.2.1.c	When the client does not specify the method to be used or where methods are employed that are not required, are the methods fully documented and validated?		

No	Reference	Question	Y-N-N/A	Comments
305	5.5.4.2.1.c	When the client does not specify the method to be used or where methods are employed that are not required, are the methods used available to the client and other recipients of the relevant reports?		
306	5.5.4.2.1.c	Does the laboratory select appropriate methods that have been published either in international, regional or national standards, or by reputable technical organizations, or in relevant scientific texts or journals, or as specified by the manufacturer of the equipment?		
307	5.5.4.2.1.c	Are laboratory-developed methods or methods adopted by the laboratory used only if they are appropriate for the intended use and if they are validated?		
308	5.5.4.2.1.c	Is the client informed as to the method chosen?		
309	5.5.4.2.1.d	Does the laboratory inform the client when the method proposed by the client is considered to be inappropriate or out of date?		
310	5.5.4.2.2	Does the laboratory confirm that it can properly operate all methods before introducing the environmental tests?		
311	5.5.4.2.2	If the method changes, does the laboratory confirm that it can properly operate the method before introducing the environmental tests?		
312	5.5.4.2.2.a	Prior to acceptance and institution of any method, is a satisfactory demonstration of method capability performed?		
313	5.5.4.2.2.a	Is this demonstration done in an applicable and available clean matrix sample of a matrix in which no target analytes or interferences are present at concentrations that impact the results of a specific test method?		
314	5.5.4.2.2.a	For analytes which do not lend themselves to spiking, is the demonstration of capability performed using quality control samples?		
315	5.5.4.2.2.b	Is a continuing demonstration of method performance, as per the quality control requirements in Appendix D (such as laboratory control samples) performed thereafter?		
316	5.5.4.2.2.c	In cases where a laboratory analyzes samples using a method that has been in use by the laboratory before July 1999, and there have been no significant changes in instrument type, personnel or method, the continuing demonstration of method performance and the analyst's documentation of continued proficiency is deemed acceptable. Does the laboratory have records on file to demonstrate that a DOC is not required?		
317	5.5.4.2.2.d	In all cases, are the appropriate forms such as the Certification Statement (Appendix C) completed and retained by the laboratory to be made available upon request?		

No	Reference	Question	Y-N-N/A	Comments
318	5.5.4.2.2.d	Is all associated supporting data necessary to reproduce the analytical results summarized in the Certification Statement retained by the laboratory?		
319	5.5.4.2.2.e	Is a demonstration of capability completed each time there is a change in instrument type, personnel, or method?		
320	5.5.4.2.2.f	In laboratories with a specialized “work cell(s)” (a group consisting of analysts with specifically defined tasks that together perform the test method), does the group as a unit meet the criteria of NELAC 5.5.4.2.2.A-E, and is this demonstration of capability fully documented?		
321	5.5.4.2.2.g	When a work cell(s) is employed, and the members of the cell change, do the new employee(s) work with experienced analyst(s) in that area of the work cell where they are employed?		
322	5.5.4.2.2.g	Does this new work cell demonstrate acceptable performance through acceptable documented continuing performance checks each time that membership in the work cell changes?		
323	5.5.4.2.2.g	If the entire work cell is changed/replaced, does the new work cell perform the demonstration of capability?		
324	5.5.4.2.2.g	Is the demonstration repeated if the four preparation batches following the change in personnel have a failure of any batch acceptance criteria, e.g., method blank and laboratory control sample?		
325	5.5.4.2.2.h	When a work cell(s) is employed, is the performance of the group linked to the training record of the individual members of the work cell?		
326	5.5.4.3	Is the introduction of environmental test methods developed by the laboratory for its own use a planned activity?		
327	5.5.4.3	Is the introduction of environmental test methods assigned to qualified personnel equipped with adequate resources?		
328	5.5.4.3	Are plans updated as development proceeds and is there effective communication amongst all personnel involved?		
329	5.5.4.4	When it is necessary to use methods not covered by standard methods, are these methods subject to agreement with the client?		
330	5.5.4.4	Does this agreement include a clear specification of the client's requirements and the purpose of the environmental test?		
331	5.5.4.4	Is the method developed validated appropriately before use?		
332	5.5.4.5.2	Does the laboratory validate non-standard methods, laboratory-designed/developed methods, standard methods used outside their published scope, and amplifications and modifications of standard methods to confirm that the methods are fit for the intended use?		

No	Reference	Question	Y-N-N/A	Comments
333	5.5.4.5.2	Is the validation as extensive as is necessary to meet the needs of the given application or field of application?		
334	5.5.4.5.2	Has the laboratory recorded the results obtained, the procedure used for the validation, & a statement as to whether the method is fit for intended use?		
335	5.5.4.5.2	Are the minimum requirements for method evaluation consistent with the initial test method evaluation requirements given in Appendix C.3 of this chapter?		
336	5.5.4.5.3	Is the range and accuracy of the values obtainable from validated methods (e. g. the uncertainty of the results, detection limit, selectivity of the method, linearity, limit of repeatability and/or reproducibility, robustness against external influences and/or cross-sensitivity against interference from the matrix of the sample/test object), as assessed for the intended use, relevant to the clients' needs?		
337	5.5.4.6.1	Does the laboratory have and apply procedures for estimating uncertainty of measurement?		
338	5.5.4.6.1	I In cases where the nature of the test method precludes rigorous, metrologically and statistically valid calculation of uncertainty of measurement, does the laboratory at least attempt to identify all the components of uncertainty and make a reasonable estimation?		
339	5.5.4.6.1	Is a reasonable estimation based on knowledge of the performance of the method and on the measurement scope?		
340	5.5.4.6.1	In cases where the nature of the test method precludes rigorous, metrologically and statistically valid calculation of uncertainty of measurement, does the laboratory ensure that the form of reporting of the result does not give a wrong impression of the uncertainty?		
341	5.5.4.6.1	Does the reasonable estimation of uncertainty make use of previous experience & validation data?		
342	5.5.4.6.2	When estimating the uncertainty of measurement, are all uncertainty components which are of importance in the given situation taken into account using appropriate methods of analysis?		
343	5.5.4.7.1	Are calculations and data transfers subject to appropriate checks in a systematic manner?		
344	5.5.4.7.1.a	Does the laboratory establish SOPs to ensure that the reported data are free from transcription and calculation errors?		
345	5.5.4.7.1.b	Has the laboratory established SOPs to ensure that all quality control measures are reviewed, and evaluated before data are reported?		
346	5.5.4.7.1.c	Does the laboratory have established SOPs addressing manual calculations including manual integrations?		

No	Reference	Question	Y-N-N/A	Comments
347	5.5.4.7.2.a	When computers, automated equipment, or microprocessors are used for the acquisition, processing, recording, reporting, storage or retrieval of environmental test, does the laboratory ensure that computer software developed by the user is documented in sufficient detail and is suitably validated as being adequate for use?		
348	5.5.4.7.2.b	When computers, automated equipment, or microprocessors are used for the acquisition, processing, recording, reporting, storage or retrieval of environmental test, does the laboratory ensure that procedures are established and implemented for protecting the data; such procedures shall include, but not be limited to, integrity and confidentiality of data entry or collection, data storage, data transmission and data processing?		
349	5.5.4.7.2.c	When computers, automated equipment, or microprocessors are used for the acquisition, processing, recording, reporting, storage or retrieval of environmental test, does the laboratory ensure that computers and automated equipment are maintained to ensure proper functioning and are provided with the environmental and operating conditions necessary to maintain the integrity of environmental test data?		
350	5.5.4.7.2.d	When computers, automated equipment, or microprocessors are used for the acquisition, processing, recording, reporting, storage or retrieval of environmental test, does the laboratory ensure that it establishes and implements appropriate procedures for the maintenance of security of data including the prevention of unauthorized access to, and the unauthorized amendment of, computer records?		
351	5.5.5.1	Is the laboratory furnished with all items of sampling, measurement and test equipment required for the correct performance of the environmental tests (including sampling, preparation of samples, processing and analysis of environmental data)?		
352	5.5.5.1	In those cases where the laboratory needs to use equipment outside its permanent control, does it ensure that the requirements of this Standard are met?		
353	5.5.5.2	Is the equipment and the software used for testing; capable of achieving the accuracy required and does it comply with specifications relevant to the environmental tests concerned?		
354	5.5.5.2	Is equipment checked and/or calibrated before use to ensure that it meets the laboratory's specification requirements and complies with the relevant standard specifications?		

No	Reference	Question	Y-N-N/A	Comments
355	5.5.5.2	Before being placed into service, is equipment (including that used for sampling) calibrated or checked to establish that it meets the laboratory's specification requirements and complies with the relevant standard specifications?		
356	5.5.5.2.1.a	Is all support equipment maintained in proper working order?		
357	5.5.5.2.1.a	Are the records of all repair and maintenance activities including service calls kept?		
358	5.5.5.2.1.b	Are the results of support equipment calibration within the specifications required of the application for which this equipment is used?		
359	5.5.5.2.1.b	Is all support equipment calibrated or verified at least annually, using NIST traceable references when available, over the entire range of use?		
360	5.5.5.2.1.b.1-2	Are the results of support equipment calibration within the specifications required of the application for which this equipment is used as follows or ☐ Is the equipment removed from service until repaired or ☐ Does the laboratory maintain records of established correction factors to correct all measurements?		
361	5.5.5.2.1.c	Are raw data records retained to document support equipment performance?		
362	5.5.5.2.1.d	Prior to use on each working day, are balances, ovens, refrigerators, freezers, and water baths checked in the expected use range, with NIST traceable references where commercially available?		
363	5.5.5.2.1.d	Is the acceptability for use or continued use determined by the needs of the analysis or application for which the equipment is being used?		
364	5.5.5.2.1.e	Are mechanical volumetric dispensing devices including burettes (except Class A glassware) checked for accuracy on at least a quarterly use basis?		
365	5.5.5.2.1.e	Do glass microliter syringes come with a certificate attesting to established accuracy or is the accuracy initially demonstrated and documented by the laboratory?		
366	5.5.5.2.1.f	For chemical tests, is the temperature, cycle time, and pressure of each run of autoclaves documented by the use of appropriate chemical indicators or temperature recorders and pressure gauges?		
367	5.5.5.2.2	Is initial instrument calibration used directly for quantitation and continuing instrument calibration verification used to confirm the continued validity of the initial calibration?		

No	Reference	Question	Y-N-N/A	Comments
368	5.5.5.2.2	If more stringent standards or requirements are included in a mandated test method or by regulation, does the laboratory demonstrate that such requirements are met?		
369	5.5.5.2.2	If it is not apparent which standard is more stringent, are the requirements of the regulation or mandated test method followed?		
370	5.5.5.2.2.1.a	Are the details of the initial instrument calibration procedures including calculations, integrations, acceptance criteria and associated statistics included or referenced in the test method SOP. When initial instrument calibration procedures are referenced in the test method, then the referenced material must be retained by the laboratory and be available for review?		
371	5.5.5.2.2.1.b	Are sufficient raw data records retained to permit reconstruction of the initial instrument calibration, e.g., calibration date, test method, instrument, analysis date, each analyte name, analyst's initials or signature; concentration and response, calibration curve or response factor; or unique equation or coefficient used to reduce instrument responses to concentration?		
372	5.5.5.2.2.1.c	Are sample results quantitated from the initial instrument calibration not quantitated from any continuing instrument calibration verification unless otherwise required by regulation, method, or program?		
373	5.5.5.2.2.1.d	Are all initial instrument calibrations verified with a standard obtained from a second manufacturer or lot if the lot can be demonstrated from the manufacturer as prepared independently from other lots? Traceability shall be to a national standard, when available.		
374	5.5.5.2.2.1.e	Is the criteria for the acceptance of an initial instrument calibration established, e.g., correlation coefficient or relative percent difference? The criteria used must be appropriate to the calibration technique employed.		
375	5.5.5.2.2.1.f	Is the lowest calibration standard the lowest concentration for which quantitative data are to be reported (see Appendix C)? Any data reported below the lower limit of quantitation should be considered to have an increased quantitative uncertainty and shall be reported using defined qualifiers or flags or explained in the case narrative.		
376	5.5.5.2.2.1.g	Is the highest calibration standard the highest concentration for which quantitative data are to be reported (see Appendix C)? Any data reported above this highest standard should be considered to have an increased quantitative uncertainty and shall be reported using defined qualifiers or flags or explained in the case narrative.		

No	Reference	Question	Y-N-N/A	Comments
377	5.5.5.2.2.1.h.1-4	For instrument technology (such as ICP or ICP/MS) with validated techniques from manufacturers or methods employing standardization with a zero point and a single point calibration standard: ☐ Are the zero point and single point calibration analyzed prior to the analysis of samples? ☐ Are a zero point and single point calibration standard analyzed with each analytical batch? ☐ Is a standard corresponding to the lowest quantitation level analyzed with each analytical batch and must meet established acceptance criteria? ☐ Is the linearity is verified at a frequency established by the method and/or the manufacturer?		
378	5.5.5.2.2.1.h	Are measured concentrations outside the working range reported with defined qualifiers or flags or explained in the case narrative?		
379	5.5.5.2.2.1.h	Are the lowest calibration standards above the limit of detection with the exception: of the following shall occur for instrument technology (such as ICP or ICP/MS) with validated techniques from manufacturers or methods employing standardization with a zero point and a single point calibration standard?		
380	5.5.5.2.2.1.i	If the initial instrument calibration results are outside established acceptance criteria, corrective actions are performed and all associated samples reanalyzed or if reanalysis of the samples is not possible, data associated with an unacceptable initial instrument calibration is reported with appropriate data qualifiers?		
381	5.5.5.2.2.1.j	If a reference or mandated method does not specify the number of calibration standards, is the minimum number is two, (one of which must be at the limit of quantitation) not including blanks or a zero standard with the noted exception of instrument technology for which it has been established by methodologies and procedures that a zero and a single point standard are appropriate for calibrations (see 5.5.5.2.2.1 h)?		
382	5.5.5.2.2.1.j	Does the laboratory have a standard operating procedure for determining the number of points for establishing the initial instrument calibration?		
383	5.5.5.3	Are up-to-date instructions on the use and maintenance of equipment (including any relevant manuals provided by the manufacturer of the equipment) readily available for use by the appropriate laboratory personnel?		
384	5.5.5.3	Is all equipment properly maintained, inspected and cleaned?		
385	5.5.5.3	Are maintenance procedures documented?		

No	Reference	Question	Y-N-N/A	Comments
386	5.5.5.3	Is equipment operated by authorized personnel?		
387	5.5.5.4	Is each item of equipment and its software used for environmental testing and calibration that is significant to the result, uniquely identified, when practicable?		
388	5.5.5.5	Are records maintained of each major item of equipment and its software significant to the environmental tests performed?		
389	5.5.5.5.a-j	Do the maintenance records include at least the following: ☐ The identity of the item of equipment and its software? ☐ The manufacturer's name, type identification, and serial number or other unique identification? ☐ Checks that equipment complies with the specification (see 5.5.5.2)? ☐ The current location? ☐ The manufacturer's instructions, if available or reference to their location? ☐ Dates, results and copies of reports and certificates of all calibrations, adjustments, acceptance criteria, and the due date of next calibration? ☐ The maintenance plan, where appropriate, and maintenance carried out to date; documentation on all routine and non-routine maintenance activities and reference material verifications? ☐ Any damage, malfunction, modification or repair to the equipment? ☐ Date received and date placed in service (if available)? ☐ If available, condition when received (e.g. new, used, reconditioned)?		
390	5.5.5.6	Does the laboratory have procedures for safe handling, transport, storage, use and planned maintenance of measuring equipment to ensure proper functioning and in order to prevent contamination or deterioration?		
391	5.5.5.7	Is equipment that has been subjected to overloading or mishandling, gives suspect results, or has been shown to be defective or outside specified limits, taken out of service?		
392	5.5.5.7	Is the equipment isolated to prevent its use or clearly labeled or marked as being out of service, until it has been repaired and shown by calibration or test to perform correctly?		
393	5.5.5.7	Does the laboratory examine the effect of the defect or departure from specified limits on previous environmental tests and institute the "Control of nonconforming work" procedure as required by 5.4.9?		

No	Reference	Question	Y-N-N/A	Comments
394	5.5.5.8	Whenever practicable, is all equipment under the control of the laboratory and requiring calibration labeled, coded or otherwise identified to indicate the status of calibration including the date when last calibrated and the date or expiration criteria when recalibration is due?		
395	5.5.5.9	When, for whatever reason, equipment goes outside the direct control of the laboratory, does the laboratory ensure that the function and calibration status of the equipment are checked and shown to be satisfactory before the equipment is returned to service?		
396	5.5.5.10	When an initial calibration is not performed on the day of analysis, is the validity of the initial calibration verified prior to sample analyses by continuing instrument calibration verification with each analytical batch?		
397	5.5.5.10.a	Are the details of the continuing instrument calibration procedure, calculations and associated statistics included or referenced in the test method SOP?		
398	5.5.5.10.b	Is the calibration verified for each compound, element, or other discrete chemical species, except for multi-component analytes such as Aroclors, Total Petroleum Hydrocarbons, or Toxaphene where a representative chemical related substance or mixture can be used?		
399	5.5.5.10.c.1-4	Is instrument calibration verification performed (CCV): ☐ At the beginning and end of each analytical batch (except, if an internal standard is used, only one verification needs to be performed at the beginning of the analytical batch) or ☐ Whenever it is expected that the analytical system may be out of calibration or might not meet the verification acceptance criteria or ☐ If the time period for calibration or the most previous calibration verification has expired or ☐ For analytical systems that contain a calibration verification requirement?		
400	5.5.5.10.e	If the continuing instrument calibration verification results obtained are outside established acceptance criteria, are corrective actions performed?		
401	5.5.5.10.e	If routine corrective action procedures fail to produce a second consecutive (immediate) calibration verification within acceptance criteria, then does the laboratory demonstrate acceptable performance after corrective action with two consecutive calibration verifications, or perform a new initial instrument calibration?		

No	Reference	Question	Y-N-N/A	Comments
402	5.5.5.10.e.1-2	When the acceptance criteria for the continuing calibration verification are exceeded high, i.e., high bias, and there are associated samples that are non-detects, then those non-detects may be reported. Otherwise the samples affected by the unacceptable calibration verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted?		
403	5.5.5.10.e.1-2	When the acceptance criteria for the continuing calibration verification are exceeded low, i.e., low bias, those sample results may be reported if they exceed a maximum regulatory limit/decision level. Otherwise the samples affected by the unacceptable verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted?		
404	5.5.5.11	Where calibrations give rise to a set of correction factors, does the laboratory have procedures to ensure that copies (e.g. in computer software) are correctly updated?		
405	5.5.5.12	Is test equipment, including both hardware and software, safeguarded from adjustments which would invalidate the test results?		
406	5.5.6.1	Does the laboratory have an established program and procedure for the calibration of its equipment which includes balances, thermometers, and control standards?		
407	5.5.6.1	Does this program include a system for selecting, using, calibrating, checking, controlling and maintaining measurement standards, reference materials used as measurement materials, and measuring and test equipment used to perform environmental tests?		
408	5.5.6.1	Is all equipment used for environmental tests, including equipment for subsidiary measurements (e. g. for environmental conditions) having a significant effect on the accuracy or validity of the result of the environmental test, or sampling, calibrated before being put into service and on a continuing basis?		
409	5.5.6.2.1	Does the laboratory ensure that the equipment used can provide the uncertainty of measurement needed?		
410	5.5.6.2.1	Is the overall program of calibration and/or verification and validation of equipment designed and operated so as to ensure that measurements made by the laboratory are traceable to national standards of measurement?		
411	5.5.6.2.2	Does the laboratory provide satisfactory evidence of correlation of results, for example by participation in a suitable program of interlaboratory comparisons, proficiency testing or independent analysis?		

No	Reference	Question	Y-N-N/A	Comments
412	5.5.6.2.2	Where traceability of measurements to SI units is not possible or not relevant, are the same requirements for traceability to, for example, certified reference materials, agreed methods and/or consensus standards required?		
413	5.5.6.3.1	Does the laboratory have a program and procedure for the calibration of its reference standards?		
414	5.5.6.3.1	Are reference standards calibrated by a body that can provide traceability to national standards?		
415	5.5.6.3.1	Are reference standards calibrated before and after any adjustment?		
416	5.5.6.3.1	Are reference standards of measurement held by the laboratory (such as class S or equivalent weights or traceable thermometers) used for calibration only and for no other purpose, unless it can be shown that their performance as reference standards would not be invalidated?		
417	5.5.6.3.2	Are reference materials, where commercially available, traceable to SI units of measurement, or to certified reference materials?		
418	5.5.6.3.2	Are internal reference materials checked as far as is technically and economically practicable?		
419	5.5.6.3.3	Are checks carried out to maintain confidence in the status of reference, primary, transfer or working standards and reference materials according to defined procedures and schedules?		
420	5.5.6.3.4	Does the laboratory have procedures for safe handling, transport, storage and use of reference standards and reference materials in order to prevent contamination or deterioration and in order to protect their integrity?		
421	5.5.6.4	Do documented procedures exist for the purchase, reception and storage of consumable materials used for the technical operations of the laboratory?		
422	5.5.6.4.a	Does the laboratory retain records for all standards, reagents, reference materials and media including: ☐ The manufacturer/vendor? ☐ The manufacturer's Certificate of Analysis or purity (if supplied)? ☐ The date of receipt? ☐ Recommended storage conditions? ☐ An expiration date after which the material shall not be used unless its reliability is verified by the laboratory?		
423	5.5.6.4.b	Are original containers (as provided by the manufacturer or vendor) labeled with an expiration date?		

No	Reference	Question	Y-N-N/A	Comments
424	5.5.6.4.c	Are records maintained on reagent, standard, and reference material preparation?		
425	5.5.6.4.c	Do the preparation records indicate: ☐ Traceability to purchased stocks or neat compounds? ☐ Reference to the method of preparation? ☐ Date of preparation? ☐ Expiration date? ☐ Preparer's initials?		
426	5.5.6.4.d	Do all containers of prepared standards, and reference materials bear a unique identifier and expiration date and are linked to the documentation requirements in 5.5.6.4.c?		
427	5.5.6.4.e	Are procedures in place to ensure prepared reagents meet the requirements of the test method?		
428	5.5.6.4.f	Do all containers of prepared reagents used bear a preparation date?		
429	5.5.6.4.f	Is an expiration date placed on a container or documented elsewhere as indicated in the laboratory's quality manual or SOP?		
430	5.5.7.1	Does the laboratory have a sampling plan and procedure for sampling when it carries out sampling of substances, materials or products for subsequent environmental testing?		
431	5.5.7.1	Is the sampling plan as well as the sampling procedure available at the location where sampling is undertaken?		
432	5.5.7.1	Are sampling plans, whenever reasonable, based on appropriate statistical methods?		
433	5.5.7.1	Does the sampling process address the factors to be controlled to ensure the validity of the environmental test and calibration results?		
434	5.5.7.1	Where subsampling (as in obtaining sample aliquots from a submitted sample) is carried out as part of the test method, does the laboratory use documented procedures and appropriate techniques to obtain representative sub-samples?		
435	5.5.7.2	Are client required deviations, additions or exclusions from the documented sampling procedure, recorded in detail with the appropriate sampling data?		
436	5.5.7.2	Are client required deviations included in all documents containing environmental test results?		
437	5.5.7.2	Are any required deviations, additions, or exclusions (to sampling plans) communicated to the appropriate personnel?		

No	Reference	Question	Y-N-N/A	Comments
438	5.5.7.3	Do the records include: ☐ The sampling procedure used? ☐ The identification of the sampler? ☐ The environmental conditions (if relevant)? Diagrams or other equivalent means to identify the sampling location (as necessary)? ☐ The statistics the sampling procedures are based upon; (if appropriate)?		
439	5.5.7.3	Does the laboratory have procedures for recording data and operations relevant to sampling that forms part of the environmental testing that is undertaken?		
440	5.5.8.1	Does the laboratory have procedures for the transportation, receipt, handling, protection, storage, retention, and/or disposal of samples, including all provisions necessary to protect the integrity of the sample, and to protect the interests of the laboratory and the client, including: ☐ Handling? ☐ Protection? ☐ Storage? ☐ Retention and/or disposal of samples, including all provisions necessary to protect the integrity of the sample?		
441	5.5.8.2	Does the laboratory have a system for identifying samples?		
442	5.5.8.2	Is the sample identification retained throughout the life of the sample in the laboratory?		
443	5.5.8.2	Is the sample identification system designed and operated so as to ensure that samples cannot be confused physically or when referred to in records or other documents?		
444	5.5.8.2	Does the sample identification system, if appropriate, accommodate a sub-division of groups of samples and the transfer of samples within and from the laboratory?		
445	5.5.8.2.a	Does the laboratory have a documented system for uniquely identifying the samples to be tested, to ensure that there can be no confusion regarding the identity of such samples at any time?		
446	5.5.8.2.a	Does the system include identification for all samples, sub-samples and subsequent extracts and/or digestates?		
447	5.5.8.2.a	Does the laboratory assign a unique identification (ID) code to each sample container received in the laboratory? Note: The use of container shape, size or other physical characteristic, such as amber glass, or purple top, is not an acceptable means of identifying the sample.		

No	Reference	Question	Y-N-N/A	Comments
448	5.5.8.2.b	Does the laboratory sample code maintain an unequivocal link with the unique field ID code assigned each container?		
449	5.5.8.2.c	Is the laboratory ID code placed on the sample container as a durable label?		
450	5.5.8.2.d	Is the laboratory ID code entered into the laboratory records and is it the link that associates the sample with related laboratory activities such as sample preparation?		
451	5.5.8.3	Upon receipt of the sample(s) is the condition, including any abnormalities or departures from normal or specified conditions as described in the environmental test method, recorded?		
452	5.5.8.3	Does the laboratory consult with the client for further instruction when there is doubt as to the suitability of a sample for environmental test, or when a sample does not conform to the description provided, or the environmental test or calibration required is not specified in sufficient detail?		
453	5.5.8.3	Are such discussions with the client (on suitability of the sample for testing) recorded?		
454	5.5.8.3.1.a.1	Are all samples which require thermal preservation accepted only if the arrival temperature is either within 2°C of the required temperature or the method specified range or for samples with a specified temperature of 4°C? Samples with a temperature ranging from just above the freezing temperature of water to 6°C shall be acceptable. Note: Samples that are hand delivered to the laboratory on the same day that they are collected may not meet this criteria. In these cases, the samples shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.		
455	5.5.8.3.1.a.2	Does the laboratory implement procedures for checking chemical preservation using readily available techniques, such as pH or free chlorine, prior to or during sample preparation or analysis?		

No	Reference	Question	Y-N-N/A	Comments
456	5.5.8.3.1.a.3.i-iii	When the following conditions are not met, does the laboratory perform a chlorine residual check on microbiological samples from chlorinated water systems: ☐ Sufficient sodium thiosulfate is added to each container to neutralize at minimum 5 mg/l of chlorine for drinking water and 15mg/l of chlorine for wastewater samples ☐ One container from each batch of laboratory prepared containers or lot of purchased ready-to-use containers is checked to ensure efficacy of the sodium thiosulfate to 5 mg/l chlorine or 15mg/l chlorine as appropriate and the check is documented ☐ Chlorine residual is checked in the field and actual concentration is documented with sample submission?		
457	5.5.8.3.1.b	Are the results of all preservation checks recorded?		
458	5.5.8.3.1.c.1-2 i-ii	If the sample does not meet the sample receipt acceptance criteria, does the laboratory either: ☐ Retain correspondence and/or records of conversations concerning the final disposition of rejected samples or ☐ Fully document any decision to proceed with the analysis of samples not meeting acceptance criteria by noting the condition of these samples on the chain of custody or transmittal form and laboratory receipt documents or adding a qualifier to the analysis data on the final report?		
459	5.5.8.3.1.d	Does the laboratory utilize a permanent chronological record such as a log book or electronic database to document receipt of all sample containers?		
460	5.5.8.3.1.d.1.i-iv	Is the sample receipt log used to record the following: ☐ Client/project name? ☐ Date and time of laboratory receipt? ☐ Unique laboratory ID code? ☐ Signature or initials of the person making the entries? Note: The placement of the laboratory ID number on the sample container is not considered a permanent record. (5.5.8.3.1.d.2)		
461	5.5.8.3.1.d.2	During the log-in process, is sample collection information unequivocally linked to the log record or included as a part of the log?		
462	5.5.8.3.1.d.2.i	Is the field ID code which identifies each container linked to the laboratory ID code in the sample receipt log?		
463	5.5.8.3.1.d.2.iii	Is the requested analyses (including applicable approved test method numbers) linked to the laboratory ID code?		

No	Reference	Question	Y-N-N/A	Comments
464	5.5.8.3.1.d.2.iv	Are any comments resulting from inspection for sample rejection linked to the laboratory ID code?		
465	5.5.8.3.1.d.2	If sample collection information is recorded/documented elsewhere, are the records a part of the laboratory's permanent records, easily retrievable upon request and readily available to individuals who will process the sample?		
466	5.5.8.3.1.d.2.ii	Are the date and time of sample collection linked to the sample container and to the date and time receipt in the laboratory		
467	5.5.8.3.1.e	Is all documentation, such as memos or transmittal forms that are transmitted to the laboratory by the sample transmitter retained?		
468	5.5.8.3.1.f	If chain of custody procedures are used, is a complete chain of custody record form maintained?		
469	5.5.8.3.2	Does the laboratory have a written sample acceptance policy that clearly outlines the circumstances under which samples shall be accepted or rejected?		
470	5.5.8.3.2	Is this sample acceptance policy available to sample collection personnel?		
471	5.5.8.3.2	Are data from any samples which does not meet the sample acceptance criteria flagged in an unambiguous manner clearly defining the nature and substance of the variation?		
472	5.5.8.3.2	Does this sample policy at least include: ☐ Proper, full, and complete documentation, which shall include sample identification, the location, date and time of collection, collector's name, preservation type, sample type and any special remarks concerning the sample? ☐ Proper sample labeling to include unique identification and a labeling system for the samples with requirements concerning the durability of the labels (water resistant) and the use of indelible ink? ☐ Use of appropriate sample containers? ☐ Adherence to specified holding times? ☐ Adequate sample volume to perform the necessary tests? ☐ Procedures to be used when samples show signs of damage, contamination or inadequate preservation?		
473	5.5.8.4	Does the laboratory have procedures and appropriate facilities for avoiding deterioration, contamination, loss or damage to the sample during storage, handling, preparation and testing?		
474	5.5.8.4	Does the laboratory follow any relevant instructions that may be provided with the test item?		

No	Reference	Question	Y-N-N/A	Comments
475	5.5.8.4	Are conditions maintained, monitored and recorded when samples have to be stored or conditioned under specified environmental conditions?		
476	5.5.8.4	Where a sample or a portion of a sample is to be held secure, does the laboratory have arrangements for storage and security that protect the condition and integrity of the secured samples or portions concerned?		
477	5.5.8.4.a	Are samples stored according to the conditions specified by preservation protocols?		
478	5.5.8.4.a.1	Are samples which require thermal preservation stored under refrigeration which is +/-2 of the specified preservation temperature unless method specific criteria exist?		
479	5.5.8.4.a.1	For samples with a specified storage temperature of 4°C, is storage maintainted at a temperature above the freezing point of water to 6°C?		
480	5.5.8.4.a.2	Are samples stored away from all standards, reagents, food and other potentially contaminating sources?		
481	5.5.8.4.a.2	Are samples stored in such a manner to prevent cross contamination?		
482	5.5.8.4.b	Are sample fractions, extracts, leachates and other sample preparation products stored according to 5.5.8.4.a above or according to specifications in the test method?		
483	5.5.8.4.b.1	Does the laboratory have SOPs for the disposal of samples, digestates, Leachates and extracts or other sample preparation products?		
484	5.5.9.1	Does the laboratory have quality control procedures for monitoring the validity of environmental tests undertaken?		
485	5.5.9.1	Are the data resulting from quality control procedures recorded in such a way that trends are detectable and, where practicable, are statistical techniques applied to the reviewing of the results?		
486	5.5.9.1.a-e	Is the quality control monitoring planned and reviewed? Note: it may include, but not limited to, the following: ☐ Regular use of certified reference materials and/or internal quality control using secondary reference materials? ☐ Participation in interlaboratory comparison or proficiency-testing program? (see Chapter 2) ☐ Replicate tests or calibrations using the same or different methods? ☐ Retesting of retained samples? ☐ Correlation of results for different characteristics of a sample? (for example, total phosphate should be greater than or equal to orthophosphate)		

No	Reference	Question	Y-N-N/A	Comments
487	5.5.9.2.a.1	Does the laboratory have detailed written protocols in place to monitor positive and negative controls to monitor tests such as blanks, spikes, reference toxicants?		
488	5.5.9.2.a.2	Does the laboratory have detailed written protocols in place to monitor tests to define the variability and/or repeatability of the laboratory results such as replicates?		
489	5.5.9.2.a.3	Does the laboratory have detailed written protocols in place to monitor measures to assure the accuracy of the test method including calibration and/or continuing calibrations, use of certified reference materials, proficiency test samples, or other measures?		
490	5.5.9.2.a.4	Does the laboratory have detailed written protocols in place to monitor measures to evaluate test method capability, such as detection limits and quantitation limits or range of applicability such as linearity?		
491	5.5.9.2.a.5	Does the laboratory have detailed written protocols in place to monitor selection of appropriate formulae to reduce raw data to final results such as regression analysis, comparison to internal/external standard calculations, and statistical analyses?		
492	5.5.9.2.a.6	Does the laboratory have detailed written protocols in place to monitor selection and use of reagents and standards of appropriate quality?		
493	5.5.9.2.a.7	Does the laboratory have detailed written protocols in place to monitor measures to assure the selectivity of the test for its intended purpose?		
494	5.5.9.2.a.8	Does the laboratory have detailed written protocols in place to monitor measures to assure constant and consistent test conditions (both instrumental and environmental) where required by the test method such as temperature, humidity, light, or specific instrument conditions?		
495	5.5.9.2.b	Is quality control acceptance criteria used to determine the usability of the data?		
496	5.5.9.2.b	Are all quality control measures assessed and evaluated on an on-going basis?		
497	5.5.9.2.c	Does the laboratory have procedures for the development of acceptance/rejection criteria where no method or regulatory criteria exist?		
498	5.5.9.2.d	Are the quality control protocols specified by the laboratory's method manual (5.5.4.1.2) followed?		
499	5.5.9.2.d	Does the laboratory ensure that the essential standards outlined in Appendix D or mandated methods or regulations (whichever is more stringent) are incorporated into their method manuals?		
500	5.5.9.2.d	When it is not apparent which is more stringent is the QC in the mandated method or regulations followed?		

No	Reference	Question	Y-N-N/A	Comments
501	5.5.10.1	Are the results of each test, or series of environmental tests carried out by the laboratory reported accurately, clearly, unambiguously and objectively, and in accordance with any specific instructions in the environmental test methods?		
502	5.5.10.1	In the case of environmental tests or calibration results performed for internal clients, or in the case of a written agreement with the client, are the results reported in a simplified way?		
503	5.5.10.1	Is any information listed in 5.5.10.2 to 5.5.10.4 which is not reported to the client readily available in the laboratory which carried out the environmental tests results?		
504	5.5.10.1	Some regulatory reporting requirements or formats such as monthly operating reports may not require all items listed, in those cases does the laboratory provide all the required information to their client for use in preparing such regulatory reports?		
505	5.5.10.1	Are the results reported in a test report that includes all the information requested by the client and necessary for the interpretation of the environmental test results, and all information required by the method used?		
506	5.5.10.1	Does the laboratory, if it is operated by a facility and whose sole function is to provide data to the facility management for compliance purposes (in-house or captive laboratories) have all applicable information specified in 5.5.10.2.a-m readily available for review by the accrediting authority?		
507	5.5.10.1	Does the facility management ensure that the appropriate report items are in the report to the regulatory authority if such information is required?		

No	Reference	Question	Y-N-N/A	Comments
508	5.5.10.2.a-e	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? ☐ A title (e.g. "Test Report," "Certificate of Results," or "Laboratory Results")? ☐ The name and address of the laboratory, the location where the environmental tests were carried out, if different from the address of the laboratory, and phone number with name of contact person for questions? ☐ Unique identification of the test report (such as the serial number), and on each page an identification in order to ensure that the page is recognized as a part of the test report? ☐ The name an address of the client and project name on the test reports? ☐ Identification of the method used?		
509	5.5.10.2.f	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? A description of, and unambiguous identification of the sample(s), including the client identification code?		
510	5.5.10.2.g	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? The date of receipt of the sample(s) where this is critical to the validity and application of the results, date and time of sample collection, the date(s) of performance of the environmental test, and time of sample preparation and/or analysis if the required holding time for either activity is less than or equal to 72 hours?		
511	5.5.10.2.h	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? Reference to the sampling plan and procedures used by the laboratory or other bodies where these are relevant to the validity or application of the results?		
512	5.5.10.2.i	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? The environmental test results with, where appropriate, the units of measurement, and any failures identified; identify whether data are calculated on a dry weight or wet weight basis; identify the reporting until such as ug/l or mg/kg; and for Whole Effluent Toxicity, identify the statistical package used to provide data;		

No	Reference	Question	Y-N-N/A	Comments
513	5.5.10.2.j	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? The name(s), function(s) and signatures or equivalent electronic identification of person(s) authorizing the test report, and date of issue?		
514	5.5.10.2.k	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? A statement to the effect that the results relate only to the samples?		
515	5.5.10.2.l	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? A statement that the certificate or report shall not be reproduced except in full, without the written approval of the laboratory?		
516	5.5.10.2.m	Does each test report include at least the following information unless the laboratory has valid reasons for not doing so, as indicated by 5.5.10.1.a and b? Laboratories accredited to be in compliance with these standards shall certify that the test results meet all requirements of NELAC or provides reasons and/or justification if they do not?		
517	5.5.10.3.1.a-f	Where it is necessary for the interpretation of the test results, does the test report also include the following: ☐ Deviations from (such as failed quality control), additions to, or exclusions from the test method, and information on specific test conditions, such as environmental conditions and any nonstandard conditions that may have affected the quality of results, including the use and definitions of data qualifiers? ☐ Where quality system requirements are not met, a statement of compliance/non-compliance with requirements and/or specifications, including identification of test results derived from any sample that did not meet NELAC sample acceptance requirements such as improper container, holding time, or temperature? ☐ Where applicable, a statement on the estimated uncertainty of measurement; information on uncertainty is needed when a client's instruction so requires? ☐ Where appropriate and needed, opinions and interpretations? ☐ Additional information which may be required by specific methods, clients or groups of clients? ☐ Qualification of numerical results with values outside of the working limits?		

No	Reference	Question	Y-N-N/A	Comments
518	5.5.10.3.2.a-f	Do test reports containing the results of sampling include the following, where necessary for the interpretation of test results: ☐ The date of sampling? ☐ Unambiguous identification of the substance, material or product sampled? (including the name of the manufacturer, the model or type of designation and serial numbers as appropriate)? ☐ The location of sampling, including any diagrams, sketches or photographs? ☐ A reference to the sampling plan and procedures used? ☐ Details of any environmental conditions during sampling that may affect the interpretation of the test results? ☐ Any standard or other specification for the sampling method or procedure, and deviations, additions to or exclusions from the specification concerned?		
519	5.5.10.4	When opinions and interpretations are included, does the laboratory document the basis upon which the opinions and interpretations have been made?		
520	5.5.10.4	Are opinions and interpretations clearly marked as such in a test report?		
521	5.5.10.5	Does the subcontractor report the results either in writing or electronically?		
522	5.5.10.5	Does the laboratory make a copy of the subcontractor's report available to the client when requested by the client?		
523	5.5.10.5	When the test report contains results of tests performed by subcontractors, are these results clearly identified by subcontractor name or applicable accreditation number?		
524	5.5.10.6	In the case of transmission of environmental test results by telephone, telex, facsimile or other electronic or electromagnetic means, are the requirements of this Standard met and ensure that all reasonable steps are taken to preserve confidentiality?		
525	5.5.10.7	Is the format of the report designed to accommodate each type of environmental test carried out and to minimize the possibility of misunderstanding or misuse?		
526	5.5.10.8	Are material amendments to a test report after issue made only in the form of a further document, or data transfer, which includes the statement "Supplement to Test Report, serial number ... [or as otherwise identified]", or an equivalent form of wording?		
527	5.5.10.8	Do such test report amendments meet all the requirements of this Standard?		

No	Reference	Question	Y-N-N/A	Comments
528	5.5.10.8	When it is necessary to issue a complete new test report, is this uniquely identified and does it contain a reference to the original that it replaces?		

No	Reference	Question	Y-N-N/A	Comments
		Appendix C – Demonstration of Capability		
529	C.1	Is all data applicable to the Demonstration of Capability retained and available?		
530	C.1	In laboratories with specialized “work cells” (a well defined group of analysts that together perform the method analysis), does the group as a unit meet criteria and is the demonstration fully documented?		
531	C.1	Are all Demonstrations of Capability documented through the use of the form in this appendix?		
532	C.1	Is a Demonstration of Capability (DOC) made prior to using any test method? (see 5.5.4.2.2).		
533	C.1	When an analyte not currently found on the laboratory's list of accredited analytes is added to an existing accredited test method, is an initial evaluation performed for that analyte?		
534	C.1	Does the laboratory document that other approaches to DOC are adequate?		
535	C.1.a	If required by mandatory test method or regulation, does the laboratory obtain a quality control sample is from an outside source? If not available, the QC sample may be prepared by the laboratory using stock standards that are prepared independently from those used in instrument calibration?		
536	C.1.b	Are the analyte(s) diluted in a volume of clean quality system matrix sufficient to prepare four aliquots at the concentration specified or if unspecified, to a concentration of 1-4 times the limit of quantitation?		
537	C.1.c	Are at least four aliquots prepared and analyzed according to the test method either concurrently or over a period of days?		
538	C.1.d	Using all of the results, is the mean recovery calculated in the appropriate reporting units and the standard deviations of the population sample (n-1) (in the same units) for each parameter of interest?		
539	C.1.d	When it is not possible to determine mean and standard deviations, such as for presence/absence and logarithmic values, does the laboratory assess performance against established and documented criteria?		
540	C.1.e	Does the laboratory compare the information from (d) above to the corresponding acceptance criteria for precision and accuracy in the test method? (if applicable) or in laboratory-generated acceptance criteria? (if there are not established mandatory criteria)?		
541	C.1.e	Does the analysis of actual samples only begin if all parameters meet the acceptance criteria? Note: If any one of the parameters do not		

No	Reference	Question	Y-N-N/A	Comments
		meet the acceptance criteria, the performance is unacceptable for that parameter.		
542	C.1.f.1-2	When one or more of the tested parameters fail at least one of the acceptance criteria, does the analyst locate and correct the source of the problem and repeat the DOC for all parameters of interest?		
543	C.2	Is a copy of the certification statement retained in the personnel records of each affected employee?		
544	C.3.1.a	Does the laboratory determine the Limit of Detection (LOD) for the method for each target analyte of concern in the quality system matrices?		
545	C.3.1.a	Are all sample-processing steps of the analytical method included the determination of the LOD?		
546	C.3.1.b	Is the validity of the LOD confirmed by qualitative identification of the analyte(s) in a QC sample in each quality system matrix containing the analyte at no more than 2-3 X the LOD for single analyte tests and 1-4 X the LOD for multiple analyte tests?		
547	C.3.1.b	Is this verification performed on every instrument that is to be used for analysis of samples and reporting of data?		
548	C.3.1.c	Where an LOD study is not performed, does the laboratory not report a value below the Limit of Quantitation?		
549	C.3.2.a	Does the laboratory determine the Limit of Quantitation (LOQ) for each analyte of concern according to a defined, documented procedure? Note: the LOQ study is not required for any component or property for which spiking solutions or quality control samples are not commercially available or otherwise inappropriate (e.g., pH).		
550	C.3.2.c	Is the validity of the LOQ confirmed by successful analysis of a QC sample containing the analytes of concern in each in each quality system matrix 1-2 times the claimed LOQ? Note: a successful analysis one where the recovery of each analyte is within the established test method acceptance criteria or client data quality objectives for accuracy. This single analysis is not required if the bias and precision of the measurement system is evaluated at the LOQ.		
551	C.3.3.a	When using Standard methods, does the laboratory evaluate the Precision and Bias of a Standard Method for each analyte of concern for each quality system matrix according to the single-concentration four-replicate recovery study procedures in Appendix C.1 above (or alternate procedure documented in the quality manual when the analyte cannot be spiked into the sample matrix and QC samples are not commercially available)?		

No	Reference	Question	Y-N-N/A	Comments
552	C.3.3.b	When using Non-Standard methods for Laboratory-developed test methods or non-standard test methods as defined at 5.5.4.3 and 5.5.4.4. that were not in use by the laboratory before July 2003, did the laboratory document procedure to evaluate precision and bias?		
553	C.3.3.b	Does the laboratory compare results of the precision and bias measurements with criteria established by the client, by criteria given in the reference method or criteria established by the laboratory?		
554	C.3.3.b	Do the precision & bias measurements evaluate the laboratory-developed or non-standard test method across the analytical calibration range of the method?		
555	C.3.3.b	Does the laboratory evaluate precision and bias in the relevant quality system matrices and process the samples through the entire measurement system for each analyte of interest? Note: Examples of systemic approach to evaluate precision & bias could be: (i) a validation protocol, such as the Tier I, Tier II, and Tier III requirements in US EPA Office of Water's Alternate Test Procedure (ATP) approval process, or (ii) replicate analysis of quality control samples at or near the LOQ, at the upper range of the calibration, & at a mid-range concentration, processed on different days as 3 sets of samples through the entire measurement system for each analyte of interest (see Appendix C.3.3(b) to NELAC Chapter 5 for further details)."		
556	C.3.4	Does the laboratory evaluate selectivity by following the checks established within the method? Note: This may include mass spectral tuning, second column confirmation, ICP inter-element interference checks, chromatography retention time windows, sample blanks, spectrochemical absorption or fluorescence profiles, co-precipitation evaluations, and electrode response factors.		

No	Reference	Question	Y-N-N/A	Comments
Appendix D – Essential Quality Control Requirements				
557	Appendix D	Does the laboratory ensure that the essential standards outlined in Appendix D are incorporated into their method manuals and/or the Laboratory Quality Manual?		
558	Appendix D	Are all quality control measures assessed and evaluated on an on-going basis?		
559	Appendix D	Are quality control acceptance criteria used to determine the validity of the data?		
560	Appendix D	Does the laboratory have procedures for the development of acceptance/rejection criteria where no method or regulatory criteria exists?		
561	Appendix D	Are the quality control protocols specified by the laboratory's method manual (5.5.4.1.2) followed?		

No	Reference	Question	Y-N-N/A	Comments
Appendix D.1 – Chemical Testing				
562	D.1.1.1.a	Is the method blank processed along with and under the same conditions as the associated samples including all steps of the analytical procedure?		
563	D.1.1.1.a	Are procedures in place to determine if a method blank is contaminated?		
564	D.1.1.1.a	Is any affected sample associated with a contaminated method blank reprocessed for analysis or the results reported with appropriate data qualifying codes?		
565	D.1.1.1.b	Is the method blank analyzed at a minimum of 1 per preparation batch?		
566	D.1.1.1.b	In those instances for which no separate preparation method is used (example: volatiles in water) is the batch defined as environmental samples that are analyzed together with the same method and personnel, using the same lots of reagents, not to exceed the analysis of 20 environmental samples?		
567	D.1.1.1.c	Does the method blank consist of a matrix that is similar to the associated samples known to be free of the analytes of interest?		
568	D.1.1.1.d	Is each method blank critically evaluated as to the nature of the interference and the effect on the analysis of each sample within the batch?		
569	D.1.1.1.d	Is the source of blank contamination investigated and measures taken to minimize or eliminate the problem?		
570	D.1.1.1.d.1	Are samples affected by blank contamination reprocessed or is the data appropriately qualified if the concentration of a targeted analyte in the blank is at or above the reporting limit as established by the test method or by regulation, AND is greater than 1/10 of the amount measured in any sample?		
571	D.1.1.1.d.2	Are samples affected by blank contamination reprocessed or is the data appropriately qualified if the blank contamination otherwise affects the sample results as per the test method requirements or the individual project data quality objectives?		
572	D.1.1.1.d.3	When a blank is determined to be contaminated, does the laboratory investigate the cause and take measures taken to minimize or eliminate the problem?		
573	D.1.1.1.d.3	Does the laboratory evaluate samples associated with a contaminated blank as to the best corrective action for the samples (e.g. reprocessing or data qualifying codes) and is the corrective action documented?		

No	Reference	Question	Y-N-N/A	Comments
574	D.1.1.2.1.b	Is the LCS analyzed at a minimum of 1 per preparation batch? (Exceptions would be for those analytes for which no spiking solutions are available such as total suspended solids, total dissolved solids, total volatile solids, total solids, pH, color, odor, temperature, dissolved oxygen or turbidity)		
575	D.1.1.2.1.b	In those instances for which no separate preparation method is used (example: volatiles in water) is the batch defined as environmental samples that are analyzed together with the same method and personnel, using the same lots of reagents, not to exceed the analysis of 20 environmental samples?		
576	D.1.1.2.1.c	If the matrix spike is used in place of the LCS are the acceptance criteria as stringent as for the LCS?		
577	D.1.1.2.1.a	Is the LCS used to evaluate the performance of the total analytical system, including all preparation and analysis steps? Note: The LCS is a controlled matrix, known to be free of analytes of interest, spiked with known and verified concentrations of analytes. Alternatively the LCS may consist of a media containing known and verified concentrations of analytes or as Certified Reference Material (CRM)		
578	D.1.1.2.1.c	Does the laboratory insure that all targeted components are included in the LCS spike mixture over a 2 year period?		
579	D.1.1.2.1.c	Are all analyte concentrations in the LCS within the calibration range of the methods?		
580	D.1.1.2.1.c	Are all the components spiked in the LCS as specified by the mandated test method or other regulatory requirement or as requested by the client?		
581	D.1.1.2.1.c	For those components that interfere with an accurate assessment such as spiking simultaneously with technical chlordane, toxaphene and PCBs, is the spike for the LCS chosen to represent the chemistries and elution patterns of the components to be reported?		
582	D.1.1.2.1.c	For those test methods that have extremely long lists of analytes, is a representative number chosen for the LCS?		
583	D.1.1.2.1.c	For methods that include 1-10 targets, are all components spiked in the LCS?		
584	D.1.1.2.1.c	For methods that include 11-20 targets, are at least 10 or 80%, whichever is greater components spiked in the LCS?		
585	D.1.1.2.1.c	For methods with more than 20 targets, are at least 16 components spiked in the LCS?		
586	D.1.1.2.1.a	Are results of the LCS compared to established criteria?		

No	Reference	Question	Y-N-N/A	Comments
587	D.1.1.2.1.d	Are the results of the individual batch LCS calculated in percent recovery or other appropriate statistical technique that allows comparison to established acceptance criteria?		
588	D.1.1.2.1.d	Does the laboratory document the statistical calculation for the LCS?		
589	D.1.1.2.1.d	Is the individual LCS compared to the acceptance criteria as published in the mandated test method?		
590	D.1.1.2.1.d	Where there are no established criteria for the LCS, does the laboratory determine internal criteria and document the method used to establish the limits or utilize client specified assessment criteria?		
591	D.1.1.2.1.a	If the LCS is found to be outside of these criteria, is the analytical system considered “out of control”?		
592	D.1.1.2.1.a	Are any affected samples associated with an out of control LCS reprocessed for re-analysis or the results reported with appropriate data qualifying codes?		
593	D.1.1.2.1.d	Are samples analyzed along with a LCS determined to be “out of control” considered suspect and the samples reprocessed and re-analyzed or the data reported with appropriate data qualifying codes?		
594	D.1.1.2.1.e	Are the number of allowable marginal exceedences determined as follows: ☐ >90 analytes in LCS, no more than 5 analytes allowed in ME of the LCS control limit? ☐ 71-90 analytes in LCS, no more than 4 analytes allowed in ME of the LCS control limit? ☐ 51-70 analytes in LCS, no more than 3 analytes allowed in ME of the LCS control limit? ☐ 31-50 analytes in LCS, no more than 2 analytes allowed in ME of the LCS control limit? ☐ 11-30 analytes in LCS, no more than 1 analytes allowed in ME of the LCS control limit? ☐ <11 analytes in LCS, no analytes allowed in ME of the LCS control limit?		
595	D.1.1.2.1.e	Are the LCS marginal exceedences random?		
596	D.1.1.2.1.e	If the same analyte exceeds the LCS control limit repeatedly, it is an indication of a systemic problem. Is the source of the error located and corrective action taken?		
597	D.1.1.2.1.e	Do laboratories have a written procedure to monitor the application of marginal exceedence allowance to the LCS to ensure random behavior?		
598	D.1.1.3	Does the laboratory document procedures for determining the effect of		

No	Reference	Question	Y-N-N/A	Comments
		the sample matrix on method performance? Note: These controls alone are not used to judge laboratory performance. Examples of matrix specific QC include: Matrix Spike (MS); Matrix Spike Duplicate (MSD); sample duplicates; and surrogate spikes.		
599	D.1.1.3	Does the laboratory have procedures in place for tracking, managing, and handling matrix specific QC criteria including spiking appropriate components at appropriate concentrations, calculating recoveries and relative percent difference, evaluating and reporting results based on performance of the QC samples? Note: Matrix specific QC samples indicate the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. The information from these controls is sample/matrix specific and would not normally be used to determine the validity of the entire batch.		
600	D.1.1.3.1.b	Is the frequency of the analysis of matrix specific samples determined as part of a systematic planning process (e. g. Data Quality Objectives) or as specified by the required mandated test method?		
601	D.1.1.3.1.c	Do the components in the matrix spike include those specified by the mandated test method?		
602	D.1.1.3.1.c	Are any permit specified analytes, as specified by regulation or client requested analytes also included in the matrix spike?		
603	D.1.1.3.1.c	For those components that interfere with an accurate assessment of the matrix spike, such as spiking simultaneously with technical chlordane, toxaphene and PCBs, is the spike chosen to represent the chemistries and elution patterns of the components to be reported? (Recommendation)		
604	D.1.1.3.1.c	For those test methods that have extremely long lists of analytes, a representative number may be chosen. Are the analytes selected for the matrix spike representative of all analytes reported? (Recommendation)		
605	D.1.1.3.1.c	Does the laboratory insure that all targeted components are included in the matrix spike mixture over a 2 year period?		
606	D.1.1.3.1.c.1	For methods that include 1-10 targets, are all components spiked in the matrix spike?		
607	D.1.1.3.1.c.2	For methods that include 11-20 targets, are at least 10 or 80%, whichever is greater, spiked in the matrix spike?		
608	D.1.1.3.1.c.3	For methods with more than 20 targets, are at least 16 components spiked in the matrix spike?		
609	D.1.1.3.1.d	Are the results from matrix spike/matrix spike duplicate expressed as percent recovery (%R), relative percent difference (RPD) or other		

No	Reference	Question	Y-N-N/A	Comments
		appropriate statistical technique that allows comparison to established acceptance criteria?		
610	D.1.1.3.1.d	Does the laboratory document the calculation for %R, RPD or other statistical treatment used in the matrix spike?		
611	D.1.1.3.1.d	Are the results of the matrix spike compared to the acceptance criteria as published in the mandated test method?		
612	D.1.1.3.1.d	Where there are no established criteria for the matrix spike, does the laboratory determine internal criteria and document the method used to establish the limits?		
613	D.1.1.3.1.d	Are matrix spike results outside established criteria corrective action documented or is the data reported with appropriate data qualifying codes?		
614	D.1.1.3.2.b	Is the frequency of the analysis of matrix duplicates determined as part of a systematic planning process (e. g. Data Quality Objectives) or as specified by the mandated test method?		
615	D.1.1.3.2.c	Are matrix duplicates performed on replicate aliquots of actual samples?		
616	D.1.1.3.2.d	Does the laboratory document the calculation for relative percent difference or other statistical treatments for the matrix duplicate?		
617	D.1.1.3.2.d	Are results of the matrix duplicate compared to the acceptance criteria as published in the mandated test method?		
618	D.1.1.3.2.d	Where there are no established criteria, does the laboratory determine internal criteria and document the method used to establish the limits for matrix duplicate?		
619	D.1.1.3.2.d	For matrix duplicate results outside established criteria, is corrective action documented or the data reported with appropriate data qualifying codes?		
620	D.1.1.3.3.b	Except where the matrix precludes its use or when not commercially available, are surrogate compounds added to all samples, standards, and blanks for all appropriate test methods? Note: Surrogates are used most often in organic chromatography test methods and are chosen to reflect the chemistries of the targeted components of the method and added prior to sample preparation/ extraction, they provide a measure of recovery for every sample matrix.		
621	D.1.1.3.3.d	Are the results of the surrogates compared to the acceptance criteria as published in the mandated test method?		

No	Reference	Question	Y-N-N/A	Comments
622	D.1.1.3.3.d	Where there are no established criteria for surrogates, does the laboratory determine internal criteria and document the method used to establish the limits? (Recommendation)		
623	D.1.1.3.3.d	Are surrogates outside the acceptance criteria evaluated for the effect indicated for the individual sample results?		
624	D.1.1.3.3.d	Is the corrective action for surrogate failure guided by the data quality objectives or other site specific requirements? (Recommendation)		
625	D.1.1.3.3.d	Do results reported from analyses with surrogate recoveries outside the acceptance criteria include appropriate data qualifiers? (Recommendation)		
626	D.1.2	Are all procedures used to determine Limit of Detection documented, including the quality system matrix type and all supporting data?		
627	D.1.2.1	Does the laboratory utilize test methods that provide a detection limit that is appropriate and relevant for the intended use of the data?		
628	D.1.2.1	Are LODs determined by the protocol in the mandated test method or applicable regulation?		
629	D.1.2.1	If the protocol for determining detection limits is not specified, does the selection of the procedure reflect instrument limitations and the intended application of the test method?		
630	D.1.2.1.a	Is the LOD initially determined for the compounds of interest in each test method in a quality system matrix in which there are not target analytes nor interferences at a concentration that would impact the results or is the LOD determined in the quality system matrix of interest (see definition of matrix)?		
631	D.1.2.1.b	Are LODs determined each time there is a change in the test method that affects how the test is performed, or when a change in instrumentation occurs that affects the sensitivity of the analysis?		
632	D.1.2.1.c	Does the laboratory have established procedures to relate LOD with LOQ?		
633	D.1.2.1.d	Is the LOD verified annually for each quality system matrix, method and analyte according to the procedure specified in C.3?		
634	D.1.2.2.a	Are any established LOQ above the LOD?		
635	D.1.2.2.b	Is the LOQ verified annually for each quality matrix, method and analyte according to the procedure specified in C.3?		
636	D.1.3	Are the procedures for data reduction, such as use of linear regression documented?		
637	D.1.4.a	Do the source standards comply with 5.5.6.2.2.2?		

No	Reference	Question	Y-N-N/A	Comments
638	D.1.4.b	In methods where the purity of reagents is not specified, is analytical reagent grade used?		
639	D.1.4.b.1	Are reagents of lesser purity than those specified by the test method never used?		
640	D.1.4.b.1	Are the labels on the container checked to verify that the purity of the reagents meets the requirements of the particular test method? (Recommendation)		
641	D.1.4.b.1	Does the laboratory document the checks to verify that the purity of the reagents meets the requirements of the particular test method?		
642	D.1.4.b.2	Is the quality of water sources monitored and documented?		
643	D.1.4.b.2	Does the quality of water sources meet method specified requirements?		
644	D.1.4.b.3	Does the laboratory verify the concentration of titrants in accordance with written laboratory procedures?		
645	D.1.5.a	Does the laboratory evaluate selectivity by following the checks established within the method, which may include mass spectral tuning, second column confirmation, ICP interelement interference checks, chromatography retention time windows, sample blanks, spectrochemical absorption or fluorescence profiles, co-precipitation evaluations, and electrode response factors?		
646	D.1.5.b	Is a confirmation performed to verify the compound identification when positive results are detected on a sample from a location that has not been previously tested by the laboratory?		
647	D.1.5.b	Are confirmations performed on organic tests such as pesticides, herbicides, or acid extractable or when recommended by the analytical test method except when the analysis involves the use of a mass spectrometer?		
648	D.1.5.b	Is confirmation performed unless stipulated in writing by the client?		
649	D.1.5.b	Are all confirmations documented?		
650	D.1.5.c	Does the laboratory document acceptance criteria for mass spectral tuning?		
651	D.1.6.a	Does the laboratory assure that the test instruments consistently operate within the specifications required of the application for which the equipment is used?		
652	D.1.6.b	Is glassware cleaned to meet the sensitivity of the test method?		
653	D.1.6.b	Are any cleaning and storage procedures not specified by the test method documented in laboratory records and SOPs?		

No	Reference	Question	Y-N-N/A	Comments
		Appendix D.2 – Toxicity Testing		
654	D.2.1.a.1	Does the laboratory demonstrate its ability to obtain consistent results with standard reference toxicants SRTs and complete an initial Demonstration of Capability (DOC)?		
655	D.2.1.a.1.i	Does the initial DOC consist of five or more acceptable SRT tests for each test method, species and endpoint with different batches of organisms?		
656	D.2.1.a.1.i	Are appropriate negative controls (water, sediment, or soil) tested at the frequency and duration specified in the test method?		
657	D.2.1.a.1.i	Are initial DOCs prepared in accordance with requirements of Appendix C?		
658	D.2.1.a.1.ii	Is initial DOC established by maintenance of SRT test results on control charts?		
659	D.2.1.a.1.ii	Does the laboratory record the control performance and statistical endpoints (such as NOEC or ECp) and for each method species and endpoint on control charts?		
660	D.2.1.a.1.ii	Is initial DOC established where 95% of the test results required in D.2.1 a) 1) i) fall within the control limits established in accordance with D.2.1. a 1) iii) and meet test acceptability criteria (TAC)?		
661	D.2.1.a.1.ii	Does the laboratory evaluate precision (i.e. coefficient of variation, [CV]) or sensitivity (i.e. statistical minimum significant difference [SMSD] measures [see D.2.1 a) 1) iv]) for these tests against method specific or (lacking the former) laboratory-derived criteria to determine validity of the initial DOC?		
662	D.2.1.a.1.iii	For endpoints that are point estimates (ICP , Ecp), are control charts constructed by plotting the cumulative mean and control limits (=/- 2 standard deviations)?		
663	D.2.1.a.1.iii	In case of highly variable point estimates which exceed method-specific criteria are the control chart limits adjusted accordingly?		
664	D.2.1.a.1.iii	For endpoints from hypothesis tests (NOEC, NOAEC) are the values plotted directly and the control limits consist of one concentration interval above and below the concentration representing the central tendency. (i.e. the mode)?		
665	D.2.1.a.1.iv	For endpoints that are point estimates, is the cumulative mean CV calculated?		
666	D.2.1.a.1.iv	For endpoints from hypothesis tests, is the SMSD calculated?		
667	D.2.1.a.1.iv	Are CV and SMSD values maintained on a control chart?		

No	Reference	Question	Y-N-N/A	Comments
668	D.2.1.a.2	Does the laboratory demonstrate on-going performance through routine SRT testing for this test method, species, & each endpoint? Note: See D.2.1.a.3 for minimum frequency requirements.		
669	D.2.1.a.2.i	Are the control charts plotted as point estimate values (e.g., EC25 for chronic tests & LC50 for acute tests) or as hypothesis test values (e.g., NOEC or NOAEC) over time?		
670	D.2.1.a.2.ii	After the initial DOC is determined, does the laboratory adjust the control limits & CV for each method, species, & endpoint as additional test results are obtained?		
671	D.2.1.a.2.ii	Are control charts maintained and calculated with only the most recent 20 data points?		
672	D.2.2	Is intralaboratory precision determined on an ongoing basis through the use of further reference toxicant tests and related control charts as described in item D.2.1.a above?		
673	D.2.1.a.2.iv	Has the laboratory developed an acceptance/rejection policies, consistent with the test methods, for SRT data which considers source of test organisms, the direction of the deviation, test dilution factor, test sensitivity (for hypothesis test values), testing frequency, out-of-control test frequency, relative width of acceptance limits, inter-test CV, and degree of difference between test results and acceptance limits.?		
674	D.2.1.a.2.v	In the case of reference toxicant data which fails to meet acceptance criteria, the results of environmental toxicity tests conducted during the affected period may be suspect and regarded as provisional. In this case, is the test procedure examined for defects and the test repeated if necessary, using a different batch of organisms, as soon as possible or the data is qualified?		
675	D.2.1.a.3	Is the frequency of reference toxicant testing compliant with the EPA or state permitting authority requirements?		
676	D.2.1.a.3.i	For test methods conducted at a frequency greater than monthly, are the SRT tests conducted at an on-going frequency of monthly? Note: The frequency of on-going laboratory SRT testing can be less frequent if the method specifically requires less frequent SRT tests (e.g., sediment tests).		
677	D.2.1.a.3.ii	For test methods and species commonly used in the laboratory, but which are tested at a frequency of less than monthly, will SRT tests be conducted concurrently with the environmental test?		
678	D.2.1.a.3.iii	If the test organisms are obtained from an outside source, does the laboratory determine the sensitivity of each batch of organisms received from a supplier via a concurrent SRT test? Note: The		

No	Reference	Question	Y-N-N/A	Comments
		laboratory is exempted from this requirement if the supplier provides control chart data for the last 5 SRT tests using the same SRT & test conditions, but supplied SRT data may not be older than 6 months.		
679	D.2.1.a.4	If the state or permitting authority identifies a reference toxicant or dilution series for a particular test, does the laboratory follow the specified requirements?		
680	D.2.1.a.4	Do all reference toxicant tests conducted for a given test method and species use the same reference toxicant, test concentrations, dilution water and data analysis methods?		
681	D.2.1.a.4	Is a dilution factor of 0.5x or greater used for both acute and chronic tests?		
682	D.2.1.a.5	Are reference toxicant tests conducted following the same procedures as the environmental toxicity tests for which the precision is being evaluated unless otherwise specified in the test method (for example, 10-day sediment tests employ 96-h water-only reference toxicant tests)?		
683	D.2.1.a.5	Is the test duration, dilution or control water, feeding, organism age, range and density, test volumes, renewal frequency, water quality measurements, and the number of test concentrations, replicates and organisms per replicate the same as specified for the environmental toxicity test?		
684	D.2.1.b.1	Is the use, type, and frequency of testing of negative controls as specified by the test method followed?		
685	D.2.1.b.1	Is a negative control included with each test to evaluate test performance and the health and sensitivity of the specific batch of organisms.?		
686	D.2.1.b.2	Are additional negative controls included when there are sample adjustments or solvent carriers are used in the test?		
687	D.2.1.b.3	Is the test acceptability criteria achieved as specified in the test method achieved for both the reference toxicant and effluent or environmental sample toxicity test?		
688	D.2.1.b.3	Is the test acceptability criteria calculated and does it meet the method requirements for performing toxicity tests?		
689	D.2.4.a	Is the SMSD calculated using the formula specified by the method?		
690	D.2.4.a	Is the SMSD reported with the test results?		
691	D.2.4.b	Point estimates: (LCp, Icp, or Ecp) - Are confidence intervals reported as a measure of precision around the point estimate value, when the calculation is possible?		

No	Reference	Question	Y-N-N/A	Comments
692	D.2.4.b	Are the confidence intervals reported as a measure of the precision around the point estimate value (LCp, ICp, or ECp)?		
693	D.2.4.c	Is the SMSD calculated and reported for only hypothesis test values, such as the NOEC or NOAEC?		
694	D.2.5.a	If required, are the methods of data analysis and endpoints specified by language in the permit or the test method?		
695	D.2.5.b	Is the data plotted in the form of a curve relating to the dose of chemical or concentration of sample to cumulative percentage of test organisms demonstrating a response such as death?		
696	D.2.5.b	Is evaluation criteria established for interpretation of concentration or dose response curves?		
697	D.2.6.a	Is the grade of all reagents used in the toxicity tests as specified in the method?		
698	D.2.6.a	Are all reference standards prepared from analytical reagent grade or better chemicals?		
699	D.2.6.a	Is the preparation of all standards and reference toxicants documented?		
700	D.2.6.b	Does the laboratory retain records for all standards and reagents associated with chemical measurements, such as dissolved oxygen, pH or specific conductance as required by 5.5.5.2.1.d?		
701	D.2.6.c	Is only reagent-grade water collected from distillation or deionization units used to prepare reagents?		
702	D.2.8.a	If closed refrigerator sized incubators are used, are culturing and testing of organisms separated to avoid loss of cultures due to cross contamination?		
703	D.2.8.b	Is laboratory space adequate for the types and numbers of tests performed?		
704	D.2.8.b	Does the building provide adequate cooling, heating and illumination for conducting testing and culturing?		
705	D.2.8.b	Are hot and cold running water available for cleaning equipment?		
706	D.2.8.c	Is air used for aeration of test solutions, dilution waters and cultures free of oil and fumes?		
707	D.2.8.d	When organisms are not supplied from an outside source, does the laboratory or a contracted outside expert positively identify test organisms to species on an annual basis?		
708	D.2.8.d	Are the taxonomic reference (citation and page(s)) and the names(s) of the taxonomic expert(s) kept on file at the laboratory?		

No	Reference	Question	Y-N-N/A	Comments
709	D.2.8.e	Are instruments used for routine measurements of chemical and physical parameters such as pH, DO, conductivity, salinity, alkalinity, hardness, chlorine, ammonia and weight calibrated, and/or standardized per manufacturer's instructions and 5.5.5.2.1?		
710	D.2.8.e	Are all chemical and physical measurements and calibrations documented?		
711	D.2.8.f	Does the laboratory maintain the test temperature as specified in the methods manual?		
712	D.2.8.f	Is the temperature control equipment adequate to maintain the required test temperature(s)?		
713	D.2.8.f	Is the average daily temperature of the test solutions maintained within the method specified range?		
714	D.2.8.f	Is the test temperature measured at least once per 24-hour period for the duration of the test?		
715	D.2.8.f	Is the test temperature for continuous flow toxicity tests recorded and monitored continuously?		
716	D.2.8.f	Where electronic data loggers are used, is the temperature monitored at a frequency sufficient to capture temporal variations of the environmental control system?		
717	D.2.8.g	Does reagent grade water, prepared by any combination of distillation, reverse osmosis, ion exchange, activated carbon and particle filtration, meet the method specified requirements?		
718	D.2.8.h	Is the quality of the standard dilution water used for testing or culturing sufficient to allow satisfactory survival, growth and reproduction of the test species as demonstrated by routine reference toxicant tests and negative control performance?		
719	D.2.8.h	Is water used for culturing and testing analyzed for toxic metals and organics whenever the minimum acceptability criteria for control survival, growth or reproduction are not met and no other cause, such as contaminated glassware or poor stock, can be identified?		
720	D.2.8.h	For those analytes not listed, or for which the measured concentration or detection limit is greater than the method-specified limit, does the laboratory demonstrate that the analyte at the measured concentration or reported limit of detection does not exceed one tenth the expected chronic value for the most sensitive species tested and/or cultured?		
721	D.2.8.h	Is the expected chronic value based on professional judgment and the best available scientific data? Note: (The "USEPA Ambient Water Quality Criteria Documents" and the EPA AQUIRE database provide guidance and data on acceptability and toxicity of individual metals and		

No	Reference	Question	Y-N-N/A	Comments
		organic compounds).		
722	D.2.8.i	If the food is used for culturing, is its suitability determined using a measure that evaluates the effect of food quality on survival and growth or reproduction of each of the relevant test species?		
723	D.2.8.i	Does the laboratory have written procedures for the statistical evaluation of food acceptance?		
724	D.2.8.j	Is the subset of organisms used to in bioaccumulation tests analyzed at the start (baseline) for the target compounds to be measured in the bioaccumulation tests?		
725	D.2.8.k	Are the test chamber size and test solution volume as specified in the methods manuals?		
726	D.2.8.k	Are all test chambers used in a test identical?		
727	D.2.8.l	Are test organisms fed the quantity and type food or nutrients specified in the test method?		
728	D.2.8.l	Are test organisms also fed at the intervals specified in the test methods?		
729	D.2.8.m	Are all organisms in a test from the same source? Note: Where available, certified seeds used for soil tests?		
730	D.2.8.n	Do all organisms used in tests, or used as brood stock to produce neonate test organisms (for example cladocerans and larval fish), appear healthy, show no signs of stress or disease and exhibit acceptable survival (90% or greater) during the 24 hour period immediately preceding use in tests?		
731	D.2.8.o	Are all materials used for test chambers, culture tanks, tubing, etc. and coming in contact with test samples, solutions, control water, sediment or soil or food non-toxic and cleaned as described in the test methods? Note: Materials must not reduce or add to sample toxicity. Appropriate materials for use in toxicity testing and culturing are described in the referenced manuals.		
732	D.2.8.p	Are the light intensity and photoperiod maintained as specified in the methods manuals?		
733	D.2.8.p	Are light intensity measurements made and recorded on a yearly basis and the photoperiod documented at least quarterly?		
734	D.2.8.p	Is the light intensity measured and recorded at the start of each algal and plant test?		
735	D.2.8.q	Is the health and culturing conditions of all organisms used for testing documented by the testing laboratory?		
736	D.2.8.q	Does that documentation include culture conditions (e.g. salinity,		

No	Reference	Question	Y-N-N/A	Comments
		hardness, temperature, pH) and observations of any stress, disease or mortality?		
737	D.2.8.q	If test organisms are obtained from an outside source, is documentation of these water quality parameters and biological observations for each lot of organism received?		
738	D.2.8.q	Does the laboratory also record each of these observations and water quality parameters upon the arrival of the organisms at the testing laboratory?		
739	D.2.8.r	Are the age and the age range of the test organisms specified in the method manuals?		
740	D.2.8.r	Is supporting information, such as hatch dates and times, times of brood releases and metrics (for example, chironomid head capsule width) documented?		
741	D.2.8.s	Does the maximum holding time for first use of effluents in a test not exceed 36 hours? Note: samples may be used for renewals up to 72 hours after first use except as prescribed by the method and approved by the regulatory agency having authority for program oversight.		
742	D.2.8.t	Are all samples chilled to 0 to 6°C during or immediately after collection except as prescribed by the method and approved by the regulatory agency having authority for program oversight?		
743	D.2.8.u	Are all organisms used in a given test from the same batch?		
744	D.2.8.v	Do all tests have the minimum number of replicates per treatment as prescribed by the method?		
745	D.2.8.w	Does the control population of Ceriodaphnia in chronic effluent or receiving water tests contain no more than 20% males?		
746	D.2.8.x	Is the culturing of C. dubia adequate such that blocking by parentage can be established?		
747	D.2.8.y	Are dissolved oxygen and pH in aquatic tests within acceptable range at test initiation?		
748	D.2.8.y	Is aeration (minimal) provided to tests if, and only if, acceptable dissolved oxygen concentrations cannot be otherwise maintained or if specified by the test method?		
749	D.2.8.z	Are the test soils or sediments within the geochemical tolerance range of the test organism?		
750	D.2.8.aa	When the test is conditionally accepted because temperature, dissolved oxygen, pH and other specified conditions fall outside specifications, is the acceptability of the test dependent on the degree of the departure and the objectives of the tests?		

No	Reference	Question	Y-N-N/A	Comments
751	D.2.8.aa	Is the acceptability of the test dependent on the experience and professional judgment of the technical employee and the permitting authority?		

No	Reference	Question	Y-N-N/A	Comments
Appendix D.3 – Microbiology Testing				
752	D.3.1.a	Does the laboratory demonstrate that the filtration equipment and filters, sample containers, media and reagents have not been contaminated through improper handling or preparation, inadequate sterilization, or environmental exposure?		
753	D.3.1.a.1	Is a sterility blank analyzed for each lot of pre-prepared, ready-to-use medium (including chromofluorogenic reagent) or batch of medium prepared in the lab prior to the first use of the medium?		
754	D.3.1.a.2	For each filtration series in the filtration technique, does the laboratory prepare one beginning and one ending sterility check for each laboratory sterilized unit prior to beginning the series or, for pre-sterilized single-use funnels, one per lot?		
755	D.3.1.a.2	When an interruption of more than 30 minutes occurs, are the filtration funnels re-sterilized?		
756	D.3.1.a.2	Are filtration units rinsed with three 20-30 mL portions of sterile rinse water after each sample filtration?		
757	D.3.1.a.2	Does the laboratory insert a sterility blank after every 10 samples or sanitize filtration units by UV light after each sample filtration?		
758	D.3.1.a.3	For pour plate technique, are sterility blanks of the medium made by pouring, at a minimum, one uninoculated plate for each lot of pre-prepared, ready-to-use media and for each batch of medium prepared in the laboratory?		
759	D.3.1.a.4	Are sterility checks on sample containers performed on at least one container for each lot of purchased, pre-sterilized containers?		
760	D.3.1.a.4	For sample containers prepared and sterilized in the laboratory, is a sterility check performed on one container per sterilized batch with non-selective growth media?		
761	D.3.1.a.5	Is a sterility blank performed on each batch of dilution water prepared in the laboratory and on each batch of pre-prepared, ready-to-use dilution water with non-selective growth media?		
762	D.3.1.a.6	Is at least one filter from each new lot of membrane filters checked for sterility with non-selective growth media?		
763	D.3.1.b.1	Is each lot of pre-prepared, ready-to-use medium (including chromofluorogenic reagent) and each batch of medium prepared in the laboratory tested with at least one pure culture of a known positive reaction prior to first use of the medium?		
764	D.3.1.c	Is each pre-prepared, ready-to-use lot of selective medium (including chromofluorogenic reagent) and each batch of selective medium prepared in the laboratory analyzed with one or more known negative		

No	Reference	Question	Y-N-N/A	Comments
		culture controls, i.e. non-target organisms, as appropriate to the method prior to first use?		
765	D.3.2	For test methods that specify colony counts such as membrane filter or plated media, are duplicate counts performed monthly on one positive sample, for each month that the test is performed?		
766	D.3.2	If the lab has two or more analysts, does each analyst count typical colonies on the same plate for each month the test is performed?		
767	D.3.2	Are duplicate counts by different analysts considered to be acceptable only if the difference is within 10%?		
768	D.3.2	In a laboratory with only one microbiology analyst, is the same plate counted twice by the analyst for each month the test is performed?		
769	D.3.2	Are duplicate counts by the same analyst considered to be acceptable only if the difference is within 5%?		
770	D.3.3.a	Does the laboratory demonstrate proficiency with the test method prior to first use by comparison to a method already approved for use in the laboratory, or by analyzing a minimum of ten spiked samples whose matrix is representative of those normally submitted to the laboratory, or by analyzing and passing one proficiency test series provided by an approved proficiency sample provider?		
771	D.3.3.a	Does the laboratory maintain the method evaluation documentation as long as the method is in use and for at least 5 years past the date of last use?		
772	D.3.3.b	Does the laboratory participate in the Proficiency Test programs (inter-laboratory) identified by NELAP to evaluate the ability of the laboratory to produce acceptable data?		
773	D.3.4.a	Are all growth and recovery media checked to assure that the target organisms respond in an acceptable and predictable manner?		
774	D.3.4.b	To ensure that analysis results are accurate, is target organism identity verified as specified in the method, e.g. by use of the completed test, or by use of secondary verification tests such as a catalase test?		
775	D.3.5	Are the calculations, data reduction, and statistical interpretations specified by each method followed?		
776	D.3.6	Does the laboratory ensure that the quality of the reagents and media used is appropriate for the test concerned?		
777	D.3.6.a	Is culture media prepared in the laboratory from commercial dehydrated powders, purchased ready to use, or prepared from basic ingredients if not available commercially or when it can be demonstrated that commercial media do not provide adequate results?		

No	Reference	Question	Y-N-N/A	Comments
778	D.3.6.a	Are media prepared by the laboratory from basic ingredients tested for performance (e.g. for selectivity, sensitivity, sterility, growth promotion, growth inhibition) prior to first use?		
779	D.3.6.a	Are detailed testing criteria information defined in either the laboratory's test methods, SOPs, Quality Manual, or similar documentation?		
780	D.3.6.b	Are reagents, commercial dehydrated powders, and media used within the shelf life of the product and documented according to 5.5.6.4?		
781	D.3.6.c	Is distilled water, deionized water, or reverse osmosis produced water free from bactericidal and inhibitory substances used in the preparation of media solutions and buffers?		
782	D.3.6.c	Is the quality of the water monitored for chlorine residual, specific conductance, and heterotrophic bacteria plate count on a monthly frequency (when in use), when maintenance is performed on the water treatment system, and at startup after a period of disuse longer than one month?		
783	D.3.6.c	Are the analyses for metals and the Bacteriological Water Quality Test (to determine presence of toxic agents or growth promoting substances) performed annually?		
784	D.3.6.c	For an exception to the annual performance of the Bacteriological Water Quality Test, does the laboratory document that their water source meets the criteria, as specified by the method, for Type I or Type II reagent water?		
785	D.3.6.c	Do the results of these analyses meet the specifications of the required method and are records of analyses maintained for five years?		
786	D.3.6.d	Are media, solutions, and reagents prepared, used and stored according to a documented procedure following the manufacturer's instructions or the test method?		
787	D.3.6.d	Does documentation for media prepared in the laboratory include: ☐ Date of preparation? ☐ Preparer's initials? ☐ Type and amount of media prepared? ☐ Manufacturer and lot number? ☐ Final pH of the media? ☐ Expiration date?		
788	D.3.6.d	Does documentation for media purchased pre-prepared, ready-to-use include: ☐ Manufacturer? ☐ Lot number?		

No	Reference	Question	Y-N-N/A	Comments
		☐ Type and amount of media received? ☐ Date of receipt? ☐ Expiration date of the media? ☐ pH of the media?		
789	D.3.7.a	In order to ensure identity and traceability, does the laboratory use reference cultures for positive and negative control culture microorganisms obtained from a recognized national collection, organization, or manufacturer recognized by the NELAP Accrediting Authority?		
790	D.3.7.a	Are microorganisms single use preparations or cultures maintained by documented procedures that demonstrate the continued purity and viability of the organism?		
791	D.3.7.a.1	Are reference cultures revived (if freeze-dried) or transferred from slants and sub-cultured once to provide reference stocks?		
792	D.3.7.a.1	Are the reference stocks preserved by a technique that maintains the desired characteristics of the strains?		
793	D.3.7.a.1	Are reference stocks used to prepare working stocks for routine work?		
794	D.3.7.a.1	Does the laboratory not re-freeze or re-use reference stocks after they are thawed?		
795	D.3.7.a.2	Are working stocks sub-cultured no more than 5 times?		
796	D.3.7.a.2	Are working stocks not sub-cultured to replace reference stocks?		
797	D.3.8.a	Are floors and work surfaces non-absorbent and easy to clean and disinfect?		
798	D.3.8.a	Are work surfaces adequately sealed?		
799	D.3.8.a	Does the laboratory provide sufficient storage space?		
800	D.3.8.a	Is the laboratory clean and free from dust accumulation?		
801	D.3.8.a	Does the laboratory prohibit plants, food, and drink in the laboratory work area?		
802	D.3.8.b.1	Are the temperature measurement devices such as liquid-in-glass thermometers, thermocouples, and platinum resistance thermometers used in incubators, autoclaves, and other equipment of the appropriate quality needed to meet the specification in the test method?		
803	D.3.8.b.1	Are the graduations of the temperature measuring devices appropriate for the required accuracy of measurement?		
804	D.3.8.b.1	Are temperature measuring devices calibrated to national or international standards at least annually?		

No	Reference	Question	Y-N-N/A	Comments
805	D.3.8.b.2.i	Is the performance of each autoclave initially evaluated by establishing its functional properties and performance, for example heat distribution characteristics with respect to typical uses?		
806	D.3.8.b.2.i	Do autoclaves meet specified temperature tolerances?		
807	D.3.8.b.2.i	Are pressure cookers not used for sterilization of growth media?		
808	D.3.8.b.2.ii	Is sterilization temperature demonstrated by the use of a continuous temperature recording device or through the use of a maximum registering thermometer with every cycle?		
809	D.3.8.b.2.ii	Are appropriate biological indicators used at least once each month of use to determine effective sterilization?		
810	D.3.8.b.2.ii	Is temperature sensitive tape used with the contents of each autoclave run to indicate that the autoclave contents have been processed?		
811	D.3.8.b.2.iii	Are records of autoclave operations maintained and include for each cycle: Date, contents, maximum temperature reached, pressure, time in sterilization mode, total run time (may be recorded as time in and time out) and analysts initials?		
812	D.3.8.b.2.iv	Is autoclave maintenance performed annually either internally or by service contract?		
813	D.3.8.b.2.iv	Does the annual maintenance of the autoclave include a pressure check and calibration of temperature device?		
814	D.3.8.b.2.iv	Are records of the maintenance of the autoclave maintained in equipment logs?		
815	D.3.8.b.2.v	Is the autoclave mechanical timing device checked quarterly against a stopwatch and is the actual time elapsed documented?		
816	D.3.8.b.3.i-iii	Is volumetric equipment calibrated as follows: ☐ Equipment with movable parts such as automatic dispensers, dispensers/diluters, and mechanical hand pipettes shall be verified for accuracy quarterly? ☐ Equipment such as filter funnels, bottles, non-class A glassware, and other marked containers calibrated once per lot prior to first use? ☐ The volume of the disposable volumetric equipment such as sample bottles, disposable pipettes, and micropipette tips checked once per lot?		
817	D.3.8.b.4	Are UV instruments, used for sanitization, tested quarterly for effectiveness with an appropriate UV light meter or by plate count agar spread plates?		
818	D.3.8.b.4	For UV instruments, used for sanitation, are bulbs replaced if output is		

No	Reference	Question	Y-N-N/A	Comments
		less than 70% of original for light tests or if count reduction is less than 99% for a plate containing 200 to 300 organisms?		
819	D.3.8.b.5	Is support equipment calibrated according to the method specified requirements? (Note this includes conductivity meters, oxygen meters, pH meters, hygrometers, and other similar measurement instruments)		
820	D.3.8.b.6.i	Has the stability and uniformity of temperature distribution and time after test sample addition required to re-establish equilibrium conditions in incubators and water baths been established?		
821	D.3.8.b.6.i	Is the temperature of incubators and water baths documented twice daily, at least four hours apart, on each day of use?		
822	D.3.8.b.6.ii	Are ovens used for sterilization checked for sterilization effectiveness monthly with appropriate biological indicators?		
823	D.3.8.b.6.ii	Do records maintained for each oven sterilization cycle include: ☐ Date? ☐ Cycle time? ☐ Temperature? ☐ Contents? ☐ Analyst's initials?		
824	D.3.8.b.7.i	Does the laboratory have a documented procedure for washing labware, if applicable?		
825	D.3.8.b.7.i	Does the laboratory use detergents designed for laboratory use?		
826	D.3.8.b.7.ii	Is glassware made of borosilicate or other non-corrosive material, free of chips and cracks, and does it have readable measurement marks?		
827	D.3.8.b.7.iii	Does the laboratory test glassware for possible presence of residues which may inhibit or promote growth of microorganisms by performing the Inhibitory Residue Test annually, and each time the lab changes the lot of detergent or washing procedures?		
828	D.3.8.b.7.iv	Is washed glassware tested at least one daily, each day of washing, for possible acid or alkaline residue by testing one piece of glassware with a suitable pH indicator such as bromthymol blue, with a record of the test being maintained?		

No	Reference	Question	Y-N-N/A	Comments
Appendix D.4 – Radiochemical Testing				
829	D.4.1.a.1	Are method blanks, analyzed at a frequency of one per preparation batch, used to assess batch acceptance?		
830	D.4.1.a.1	Is the method blank result assessed against the specific acceptance criteria specified in the laboratory method manual?		
831	D.4.1.a.1	When the method blank acceptance criteria are not met, are the corrective action and contingencies specified in the laboratory method manual followed and are results reported with appropriate data qualifying codes?		
832	D.4.1.a.1	Does the laboratory note the occurrence of a failed method blank and the actions taken in the laboratory report?		
833	D.4.1.a.2	In the case of gamma spectrometry, is the method blank prepared from a calibrated counting geometry that is empty or filled to similar volume to partially simulate gamma attenuation due to a sample matrix?		
834	D.4.1.a.3	Is the method blank result not subtracted from the sample results in the associated preparation or analytical batch unless permitted by test method or program?		
835	D.4.1.a.3	If a correction factor such as instrument background, analyte presence in tracer, reagent impurity or peak overlap is applied to all analyzed samples submitted and internal QC samples, do these correction factors not depend on the required method blank result for the associated analytical batch?		
836	D.4.1.a.4	Is the method blank prepared with similar aliquot size to that of the routine samples analyzed?		
837	D.4.1.a.4	Are the method blank result and acceptance criteria calculated in a manner that compensates for sample results based upon differing aliquot size?		
838	D.4.1.b.1	Are Laboratory Control Samples (LCS) analyzed at a frequency of one per preparation batch?		
839	D.4.1.b.1	Are the results of the analysis of the LCS used as one of the quality control measures to be used to assess batch acceptance?		
840	D.4.1.b.1	Is the LCS result assessed against the specific acceptance criteria specified in the laboratory method manual?		
841	D.4.1.b.1	When the specified LCS acceptance criteria is not met, is the specified corrective action and contingencies followed?		
842	D.4.1.b.1	Is the occurrence of a failed LCS acceptance criteria and the actions taken noted in the laboratory report?		

No	Reference	Question	Y-N-N/A	Comments
843	D.4.1.b.2	Is a Matrix Spike analyzed at a frequency of one per preparation batch for those methods which include a chemical separation process without the use of an internal standard or carrier and for where there is sufficient sample to do so? (Note: the exceptions are gross alpha, gross beta, and tritium which require matrix spikes for aqueous samples.)		
844	D.4.1.b.2	Are the results of the matrix spike analysis one of the quality control measures used to assess batch acceptance?		
845	D.4.1.b.2	Is the matrix spike result assessed against the specific acceptance criteria specified in the laboratory method manual?		
846	D.4.1.b.2	When the specified matrix spike acceptance criteria is not met, is the specified corrective action and contingencies followed?		
847	D.4.1.b.2	Is the occurrence of a failed matrix spike acceptance criteria and the actions taken noted in the laboratory report?		
848	D.4.1.b.2	Is the lack of sufficient sample aliquot size to perform a matrix spike analysis noted in the laboratory report?		
849	D.4.1.b.3	Is the activity of the LCS greater than 5 times the detection limit or at a level comparable to that of routine samples if the sample activities are expected to exceed 5 times the detection limit?		
850	D.4.1.b.5	Are the laboratory standards used to prepare the LCS and matrix spike from a source independent of the laboratory standards used for instrument calibration?		
851	D.4.1.b.6	Is the matrix spike prepared by adding a known activity of target after subsampling if required but before any chemical treatment (e.g., chemical digestion, dissolution, separation, etc.)?		
852	D.4.1.b.6	Where more than one analyte isotope is present in the LCS or matrix spike above the specified detection limit, is the activity level of each analyte assessed against the specified acceptance criteria?		
853	D.4.1.b.7	Where gamma spectrometry is used to identify and quantitate more than one analyte isotope, does the LCS contain isotopes that represent the low (e.g. americium-241), medium (e.g. cesium-137) and high (e.g. cobalt-60) energy range of the analyzed gamma spectra? (The isotopes need not exactly bracket the calibrated energy range or the range over which isotopes are identified and quantitated.)		
854	D.4.1.b.8	Is the laboratory control sample prepared using a similar aliquot size to that of the routine samples for analysis?		
855	D.4.1.c.1	For those methods that utilize a tracer (i.e. internal standard), is each sample tracer recovery calculated and reported?		

No	Reference	Question	Y-N-N/A	Comments
856	D.4.1.c.1	Is the tracer added to the sample after subsampling if required but before any chemical treatment (e.g., chemical digestion, dissolution, separation, etc.) unless otherwise specified by the method?		
857	D.4.1.c.1	Is the tracer recovery assessed against the specific acceptance criteria specified in the laboratory method manual?		
858	D.4.1.c.1	When the specified tracer recovery acceptance criteria is not met, are the specified corrective action and contingencies followed?		
859	D.4.1.c.1	Is the occurrence of a failed tracer recovery acceptance criteria and the actions taken noted in the laboratory report?		
860	D.4.1.c.2	For those methods that utilize a carrier for recovery determination, does each sample have an associated carrier recovery calculated and reported.?		
861	D.4.1.c.2	Is the carrier added to the sample after subsampling, if required, but before any chemical treatment (e.g., chemical digestion, dissolution, separation, etc.) unless otherwise specified by the method?		
862	D.4.1.c.2	Is the carrier recovery assessed against the specific acceptance criteria specified in the laboratory method manual?		
863	D.4.1.c.2	When the specified carrier recovery acceptance criteria is not met, is the specified corrective action and contingencies followed?		
864	D.4.1.c.2	Is the occurrence of a failed carrier recovery acceptance criteria and the actions taken noted in the laboratory report?		
865	D.4.2.a	Are replicates analyzed at a frequency of one per preparation batch where there is sufficient sample to do so?		
866	D.4.2.a	Are the results of replicate analysis one of the quality control measures used to assess batch acceptance?		
867	D.1.1.3.3	For low level samples (less than approximately three times the limit of detection) does the laboratory analyze duplicate laboratory control samples or a replicate matrix spike (matrix spike and a matrix spike duplicate) to determine reproducibility within a prepared batch)?		
868	D.4.2.a	Is the replicate result assessed against the specific acceptance criteria specified in the laboratory method manual?		
869	D.4.2.a	When the specified replicate acceptance criteria is not met, are the specified corrective action and contingencies followed?		
870	D.4.2.a	Is the occurrence of a failed replicate acceptance criteria and the actions noted in the laboratory report?		
871	D.4.3.a	In order to ensure the accuracy of the reported result, does the laboratory perform an Initial Demonstration of Capability - (section 5.5.4.2.2 and Appendix C) (prior to the analysis of any samples) and		

No	Reference	Question	Y-N-N/A	Comments
		with a significant change in instrument type (e.g., different detection technique), personnel or method?		
872	D.4.3.b	In order to ensure the accuracy of the reported result, does the laboratory evaluate the ability of the laboratory to produce accurate data by using results from Proficiency Test Samples?		
873	D.4.4.a.1	Does the laboratory calibrate radiation measurement instruments prior to initial use, when the instrument is placed back in service after malfunctioning and when the instrument's response exceeds predetermined acceptance criteria for the instrument quality control?		
874	D.4.4.a.2	Does the laboratory perform instrument calibration with reference standards as defined in section D.4.7.a, and do the standards have the same general characteristics (i.e., geometry, homogeneity, density, etc.) as the associated samples?		
875	D.4.4.a.3	Is the frequency of calibration specified in the laboratory method manual or test method?		
876	D.4.4.a.3	Is a specific frequency (e.g., monthly) or observations from associated control or tolerance charts specified in the laboratory method manual?		
877	D.4.4.b	Are performance checks performed using appropriate check sources and monitored with control charts or tolerance charts to ensure that the instrument is operating properly and that the detector response has not changed?		
878	D.4.4.b	Is the same check source used in the preparation of the tolerance chart or control chart at the time of calibration and in the calibration verification of the instrument?		
879	D.4.4.b	Do the check sources provide adequate counting statistics for a relatively short count time?		
880	D.4.4.b	Is the check source sealed or encapsulated to prevent loss of activity and contamination of the instrument and laboratory personnel? (Recommendation)		
881	D.4.4.b.1	For gamma spectroscopy systems, are the performance checks for efficiency and energy calibration performed on a day of use basis along with performance checks on peak resolution?		
882	D.4.4.b.2	For alpha spectroscopy systems, are the performance check for energy calibration performed on a weekly basis, and the performance check for counting efficiency performed on at least a monthly basis?		
883	D.4.4.b.3	For gas-proportional and liquid scintillation counters, is the performance check for counting efficiency performed on a day of use basis? (Note: Verification of instrument calibration does not directly verify secondary calibrations, e.g., the mass efficiency curve or the		

No	Reference	Question	Y-N-N/A	Comments
		quench curve)		
884	D.4.4.b.3	For batches of samples that uninterruptedly count for more than a day, is a performance check performed at the beginning and end of the batch as long as this time interval is no greater than one week?		
885	D.4.4.b.4	For scintillation counters, is the calibration verification check for counting efficiency performed on a day of use basis?		
886	D.4.4.c	Are background measurements made on a regular basis?		
887	D.4.4.c	Are background measurements monitored using control charts or tolerance charts to ensure that a laboratory maintains its capability to meet required data quality objectives?		
888	D.4.4.c.1	For gamma spectroscopy systems, are background measurements performed on at least a monthly basis?		
889	D.4.4.c.2	For alpha spectroscopy systems, are background measurements performed on at least a monthly basis?		
890	D.4.4.c.3	For gas-proportional counters, are background measurements performed on a weekly basis?		
891	D.4.4.c.4	For scintillation counters, are background calibration measurements performed on a day of use basis?		
892	D.4.4.d	Does the laboratory have a written procedure for monitoring radiation measurement instrumentation for radioactive contamination?		
893	D.4.4.d	Does the procedure indicate the frequency of the monitoring and shall indicate criteria, which initiates corrective action?		
894	D.4.5.a	Are detection limits determined prior to sample analysis and re-determined each time there is a significant change in the test method or instrument type?		
895	D.4.5.b	Are the procedures for the determination of detection limits documented and consistent with mandated methods or regulations?		
896	D.4.6.b	Is each result reported with the associated measurement uncertainty, and are the procedures for determining measurement uncertainty documented and consistent with mandated methods and regulations?		
897	D.4.7.a	Does the laboratory’s quality control program establish and maintain provisions for radionuclide standards?		
898	D.4.7.a.1	Are the reference standards used, obtained from the National Institute of Standards and Technology (NIST), or suppliers who participate in supplying NIST standards or NIST traceable radionuclides?		
899	D.4.7.a.1	Are any reference standards purchased outside the United States traceable back to each country's national standards laboratory?		

No	Reference	Question	Y-N-N/A	Comments
900	D.4.7.a.1	Do commercial suppliers of reference standards conform to ANSI N42.22 to assure the quality of their products?		
901	D.4.7.a.2	Are reference standards accompanied with a certificate of calibration whose content is as described in ANSI N42.22 - 1995, Section 8, Certificates?		
902	D.4.7.a.3	Does the laboratory have written procedures for handling, storing, & establishment of expiration dates for reference standards?		
903	D.4.7.a.3	Does the laboratory consult with the supplier if the lab's verification of the activity of the reference traceable standard indicates a noticeable deviation from the certified value? (Recommendation)		
904	D.4.7.a.3	Does the laboratory use only the decay corrected certified value for the value for a standard?		
905	D.4.7.b	Are all reagents used analytical reagent grade or better?		
906	D.4.8	Does the laboratory maintain a radiological control program that addresses analytical radiological control?		
907	D.4.8	Does the program address the procedures for segregating samples with potentially widely varying levels of radioactivity?		
908	D.4.8	Does the radiological control program explicitly define how low level and high level samples will be identified, segregated and processed in order to prevent sample cross-contamination?		
909	D.4.8	Does the radiological control program include the measure taken to monitor and evaluate background activity or contamination on an ongoing basis?		

No	Reference	Question	Y-N-N/A	Comments
		Appendix D.5 – Air Testing		
910	D.5.1.a.1	Are method blanks analyzed at the frequency of at least one per batch of 20 or less environmental samples?		
911	D.5.1.a.1	Are the method blank results used to evaluate the contribution of laboratory provided sampling media and analytical sample preparation procedures to the amount of analyte found in each sample?		
912	D.5.1.a.1	If the method blank result is greater than the detection limit and contributes greater than 10% of the total amount of analyte found in the sample, does the laboratory investigate and take measures to eliminate the source of contamination?		
913	D.5.1.a.1	Does the laboratory qualify the data in the report if blank contamination is found?		
914	D.5.1.a.2	If sampling trains consisting of one or more multi-section sorbent tubes received intact by the laboratory, are sections separated into "front" and "back" sections if required by the client?		
915	D.5.1.a.2	Is each section of sorbent tube processed and analyzed separately and are the analytical results reported separately?		
916	D.5.1.b.1	Are laboratory control samples analyzed at the rate of at least one per batch of 20 or fewer samples per sample preparation method for each analyte?		
917	D.5.1.b.1	If a spiking solution is not available, does the laboratory include a calibration solution whose concentration approximates that of the samples into each batch and with each lot of media?		
918	D.5.1.b.1	If a calibration solution must be used for the LCS, is the client notified prior to the start of analysis?		
919	D.5.1.b.1	Is the concentration of the LCS relevant to the intended use of the data and either at a regulatory limit or below it?		
920	D.5.1.c	Are surrogates used as required by the test method or if requested by the client?		
921	D.5.1.d	Are matrix spikes used as required by the method or as requested by the client?		
922	D.5.2	Are matrix spike duplicates (MSDs) or laboratory duplicates analyzed at a minimum of 1 in 20 samples per sample batch?		
923	D.5.2	Does the laboratory document their procedures to select the use of appropriate types of spikes and duplicates?		
924	D.5.2	Does the laboratory rotate selected spikes and duplicates among client samples so that various matrix problems may be noted and/or addressed?		

No	Reference	Question	Y-N-N/A	Comments
925	D.5.2	Is poor performance in the spikes and duplicates, which may indicate a problem with the sample composition, reported to the client?		
926	D.5.3.a	Is a Demonstration of Capability performed prior to analysis of any samples and with significant change in instrument type, personnel, matrix, or test method?		
927	D.5.3.b	Are the calibration protocols specified in 5.5.5.2 followed?		
928	D.5.3.c	Does the laboratory use the results of Proficiency Test samples to evaluate the ability of the laboratory to produce accurate data?		
929	D.5.4	Does the laboratory meet the requirements for Limit of Detection as detailed in D.1.2.1?		
930	D.5.5	Does the laboratory have documented procedures for data reduction?		
931	D.5.6.a	Do standards and reagents meet the requirements of 5.5.6.2.2.2?		
932	D.5.6.b	Is the purity of each analyte standard documented through certificates of analysis from the manufacturer/vendor, manufacturer/vendor specifications, and/or independent analysis?		
933	D.5.6.c	For test methods where the purity of the reagents is not specified, does the laboratory use analytical reagent grade or higher quality, if available?		
934	D.5.7	Does the laboratory develop and document acceptance criteria for test method selectivity such as absolute and relative retention times, wavelength assignments, mass spectral library quality of match, and mass spectral tuning?		
935	D.5.8.a	Does the laboratory assure that test instruments operate consistently within the specifications required of the application for which the equipment is used?		
936	D.5.8.b	Does the laboratory document that all sampling equipment, containers, and media used or supplied by the laboratory meet required test method criteria?		
937	D.5.8.c	If supplied or used by the laboratory, are procedures for field equipment decontamination developed and documented?		
938	D.5.8.d	If supplied or used by the laboratory, is there a documented program for calibration and verification of sampling equipment such as pumps, meter boxes, critical orifices, flow measurement devices, and continuous analyzers?		

No	Reference	Question	Y-N-N/A	Comments
Appendix D.6 – Asbestos Testing				
Negative Controls – TEM – Water and Wastewater				
939	D.6.1.1.1.a	Are water blank determinations made prior to sample collection?		
940	D.6.1.1.1.a	When using polyethylene bottles, is one bottle from each batch, or a minimum of one from each 24 tested for background level?		
941	D.6.1.1.1.a	When using glass bottles, are four bottles from each 24 tested for background level?		
942	D.6.1.1.1.a	Is an acceptable bottle blank level defined as < 0.01 MFL for asbestos fiber length > 10 µm?		
943	D.6.1.1.1.b	Is a process blank sample, consisting of fiber-free water, run before the first field sample?		
944	D.6.1.1.1.b	Is the quantity of blank water >10 mL for a 25-mm diameter filter and >50 mL for a 47-mm diameter filter?		
Negative Controls – TEM – Air				
945	D.6.1.1.2.a	Is a blank filter prepared with each set of air samples?		
946	D.6.1.1.2.a	Is a blank filter left uncovered during preparation of the air sample set and a wedge from that blank filter prepared alongside wedges from the air sample filters?		
947	D.6.1.1.2.a	At minimum, is the blank filter analyzed for each 20 bulk asbestos samples analyzed?		
948	D.6.1.1.2.b	Is contamination on a single air blank filter no more than 53 structures/mm2 ?		
949	D.6.1.1.2.b	Is a maximum average contamination for all air blank filters no more than 18 structures/mm2?		
Negative Controls – TEM – Bulk Samples				
950	D.6.1.1.3.a	Are contamination checks, using asbestos-free material, such as the glass fiber blank in SRM 1866 performed at a frequency of 1 for every 20 samples analyzed?		
951	D.6.1.1.3.a	When asbestos is detected in a bulk blank at a concentration greater than 0.1% does the laboratory perform an investigation to detect and remove the source of the asbestos contamination?		
952	D.6.1.1.3.b	Does the laboratory maintain a list of non-asbestos fibers that can be confused with asbestos?		
953	D.6.1.1.3.b	Does the list include crystallographic and/or chemical properties that disqualify each fiber being identified as asbestos?		
954	D.6.1.1.3.c	Does the laboratory have a set of reference asbestos materials from which a set of reference diffraction and X-ray spectra have been		

No	Reference	Question	Y-N-N/A	Comments
		developed? (Recommendation)		
Phase Contrast Microscopy				
955	D.6.1.2	Are at least two (2) field blanks (or 10% of the total samples, whichever is greater) submitted for analysis with each set of samples?		
956	D.6.1.2	Are field blanks handled in a manner representative of actual handling of associated samples in the set with a single exception that air is not drawn through the blank sample?		
957	D.6.1.2	Is a blank cassette opened for approximately thirty (30) seconds at the same time other cassettes are opened just prior to analysis?		
958	D.6.1.2	Are results from field blank samples used in the calculation to determine final airborne fiber concentration?		
959	D.6.1.2	Is the identity of blank filters unknown to the counter until all counts have been completed?		
960	D.6.1.2	Is possible contamination of the samples reported if a field blank yields greater than 7 fibers per 100 graticule fields?		
Polarized Light Microscopy				
961	D.6.1.3.a	For friable materials, is at least one blank slide prepared daily or with every 50 samples analyzed, whichever is less?		
962	D.6.1.3.a	Is this blank slide prepared by mounting a subsample of an isotropic verified non-ACM (e.g., fiberglass in SRM 1866) in a drop of immersion oil (nD should reflect usage of various nD's) on a clean slide, rubbing preparation tools (forceps, dissecting needles, etc.) in the mount and placing a clean cover slip on the drop?		
963	D.6.1.3.a	Is the entire area under the cover slip scanned to detect any asbestos contamination?		
964	D.6.1.3.a	Is a similar check made after every 20 uses of each piece of homogenization equipment?		
965	D.6.1.3.a	Is an isotropic verified non-ACM homogenized in the clean equipment, a slide prepared with the material and the slide scanned for asbestos contamination? (This can be substituted for the blank slide mentioned in this section.)		
966	D.6.1.3.b	Is a least one non-ACM non-friable material prepared and analyzed with every 20 non-friable samples analyzed?		
967	D.6.1.3.b	Does this non-ACM go through the full preparation and analysis regimen for the type of analysis being performed?		
Test Variability/Reproducibility - TEM				
968	D.6.2.1	Are quality assurance analyses performed regularly covering all time periods, instruments, tasks, and personnel?		

No	Reference	Question	Y-N-N/A	Comments
969	D.6.2.1	Is the selection of samples random and are samples of special interest included in the selection of samples for quality assurance analyses?		
970	D.6.2.1	When possible, are the checks on personnel performance executed without their prior knowledge?		
971	D.6.2.1	Does the laboratory ensure that a disproportionate number of analyses are not performed prior to internal or external audits?		
972	D.6.2.1	Is the laboratory initially at 100% quality control (all samples reanalyzed)? (Recommendation)		
973	D.6.2.1	Is the proportion of quality control samples later lowered gradually, as control indicates, to a minimum of 10%? (Recommendation)		
Test Variability/Reproducibility – TEM – Water and Wastewater				
974	D.6.2.1.1	Are all analyses performed on relocator grids so that other laboratories can easily repeat analyses on the same grid openings?		
975	D.6.2.1.1	Are quality assurance analyses not postponed during periods of heavy workloads?		
976	D.6.2.1.1	Is the total number of QA samples and blanks greater than or equal to 10% of the total sample workload?		
977	D.6.2.1.1.a	Are replicates (second, independent analyses performed on the same grids but on different grid openings than used in the original analysis of a sample) analyzed at a frequency of 1 per 100 samples?		
978	D.6.2.1.1.a	Are replicate results within 1.5X of Poisson standard deviations?		
979	D.6.2.1.1.b	Are duplicates (a second aliquot of sample filtered through a second filter, prepared and analyzed in the same manner as the original preparation of that sample) analyzed at a frequency of 1 per 100 samples?		
980	D.6.2.1.1.b	Are duplicate results within 2.0 X Poisson standard deviations?		
981	D.6.2.1.1.c	Is a verified analysis (second, independent analysis performed on the same grids and grid openings used in the original analysis of a sample) performed at a frequency of 1 per 20 samples?		
982	D.6.2.1.1.c	Are the verified analyses compared according to Turner and Steel?		
983	D.6.2.1.1.c	Do qualified analysts maintain an average of ≥ 80% true positives, ≤ 20% false negatives, and ≤ 10% false positives on the basis of verified analyses?		
Test Variability/Reproducibility – TEM - Air				
984	D.6.2.1.2	Are all analyses performed on relocator grids so that other laboratories can easily repeat analyses on the same grid openings?		
985	D.6.2.1.2	Do the laboratory and TEM analysts obtain mean analytical results on		

No	Reference	Question	Y-N-N/A	Comments
		NIST SRM 1876b so that trimmed mean values fall within 80% of the lower limit and 110% of the upper limit of the 95% confidence limits as published on the certificate?		
986	D.6.2.1.2	Is SRM 1876b analyzed a minimum of once per year by each TEM analyst?		
987	D.6.2.1.2	Does the laboratory have documentation demonstrating that TEM analysts correctly classify at least 90% of both bundles and single fibrils of asbestos structures greater than or equal to 1 µm in length in known standard materials traceable to NIST, such as NIST bulk asbestos SRM 1866?		
988	D.6.2.1.2	Is inter-laboratory TEM analyses performed to detect laboratory bias?		
989	D.6.2.1.2	Does the frequency of inter-laboratory TEM verified analysis correspond to a minimum of 1 per 200 grid square analyses for clients?		
990	D.6.2.1.2	If more than 1 TEM is used for asbestos analysis, are intermicroscope analyses performed to detect instrument bias?		
991	D.6.2.1.2.a	Are replicates (second, independent analyses performed on the same grids but on different grid openings than used in the original analysis of a sample) analyzed at a frequency of 1 per 100 samples?		
992	D.6.2.1.2.a	Are replicate results within 1.5 X of Poisson standard deviation?		
993	D.6.2.1.2.b	Are duplicates (a second wedge from a sample filter prepared and analyzed in the same manner as the original preparation of that sample) analyzed at a frequency of 1 per 100 samples?		
994	D.6.2.1.2.b	Are duplicate results within 2.0 X of Poisson standard deviation?		
995	D.6.2.1.2.c	Is a verified analysis (second, independent analysis performed on the same grids and grid openings used in the original analysis of a sample) analyzed at a frequency of 1 per 20 samples?		
996	D.6.2.1.2.c	Are the two verified analyses compared according to Turner and Steel?		
997	D.6.2.1.2.c	Do qualified analysts maintain an average of ≥ 80% true positives, ≤ 20% false negatives, and ≤ 10% false positives on the basis of these verified analyses?		
Test Variability/Reproducibility – TEM – Bulk Samples				
998	D.6.2.1.3	Does determination of precision and accuracy follow guidelines in NISTIR 5951, Guide for Quality Control on the Qualitative and Quantitative Analysis of Bulk Asbestos Samples: Version 1? (Recommendation)		

No	Reference	Question	Y-N-N/A	Comments
999	D.6.2.1.3	Because bulk samples with low (< 10%) asbestos content are the most problematic, does the laboratory's quality control program focus on such samples? (Recommendation)		
1000	D.6.2.1.3	Are at least 30% of a laboratory's QC analyses performed on samples containing from 1% to 10% asbestos?		
1001	D.6.2.1.3.a	Are at least 1 out of 50 samples reanalyzed by the same analyst?		
1002	D.6.2.1.3.a	For single analyst laboratories, are at least 1 out of every 10 samples reanalyzed by the same analyst?		
1003	D.6.2.1.3.b	Are at least 1 out of 15 samples reanalyzed by another analyst?		
1004	D.6.2.1.3.b	Does the laboratory perform additional reanalysis, possibly including another analyst, to resolve discrepancies when classification (ACM vs. non-ACM) errors occur, when asbestos identification errors occur, or when inter-analyst precision is found to be unacceptable?		
1005	D.6.2.1.3.c	Does the laboratory participate in round robin testing with at least one other laboratory?		
1006	D.6.2.1.3.c	Are round robin samples sent to this other lab at least four times per year?		
1007	D.6.2.1.3.c	Are these round robin samples previously analyzed as QC samples?		
1008	D.6.2.1.3.c	Are results of these round robin analyses assessed in accordance with QC requirements?		
1009	D.6.2.1.3.c	As a minimum, do the QC requirements address misclassifications (false positives, false negatives) and misidentification of asbestos types?		
Test Variability/Reproducibility – Phase Contrast Microscopy				
1010	D.6.2.2.a	Does each laboratory analyzing air samples for compliance determination implement an inter-laboratory quality assurance program that as a minimum includes participation of at least two (2) other independent laboratories?		
1011	D.6.2.2.a	Does each laboratory participate in round robin testing at least once every six (6) months with at least all the other laboratories in its inter-laboratory quality assurance group?		
1012	D.6.2.2.a	Does each laboratory submit slides typical of its own workload for use in this round robin?		
1013	D.6.2.2.a	Is the round robin designed and are the results analyzed using appropriate statistical methodology?		
1014	D.6.2.2.a	Are the results of this QA program posted in each laboratory to keep the microscopists informed?		

No	Reference	Question	Y-N-N/A	Comments
1015	D.6.2.2.b	Does each analyst select and count a prepared slide from a “reference slide library” on each day on which air counts are performed?		
1016	D.6.2.2.b	Are reference slides prepared using well-behaved samples taken from the laboratory workload?		
1017	D.6.2.2.b	Do fiber densities cover the entire range routinely analyzed by the laboratory?		
1018	D.6.2.2.b	Are these slides counted by all analysts to establish an original standard deviation and corresponding limits of acceptability?		
1019	D.6.2.2.b	Are results from the daily reference sample analysis compared to the statistically derived acceptance limits using a control chart or a database?		
1020	D.6.2.2.b	Are the labels on the reference slides periodically changed so that the analysts do not become familiar with the samples? (Recommendation)		
1021	D.6.2.2.b	Is intra- and inter-analyst precision estimated from blind recounts on reference samples? (Recommendation)		
1022	D.6.2.2.b	Is inter-analyst precision posted in each laboratory to keep the microscopists informed?		
Test Variability/Reproducibility – Polarized Light Microscopy				
1023	D.6.2.3	Are the test variability and reproducibility of Polarized Light Microscopy analyses assessed according to D.6.2.1.3?		
Other Quality Control Measures – TEM – Water and Wastewater				
1024	D.6.3.1.1.a	Are filter preparations made from all six asbestos types from NIST SRMs 1866 and 1867?		
1025	D.6.3.1.1.a	Do these filter preparations have concentrations between 1 and 20 structures (> 10µm) per 0.01 mm2		
1026	D.6.3.1.1.a	Is one of these filter preparations analyzed independently at a frequency of 1 per 100 samples analyzed?		
1027	D.6.3.1.1.a	Are results evaluated as verified asbestos analysis in accordance with Turner and Steel?		
1028	D.6.3.1.1.b	Is NIST SRM 1876b analyzed annually by each analyst?		
1029	D.6.3.1.1.b	Are results evaluated in accordance with limits published for that SRM? (Comment: This SRM is not strictly appropriate for waterborne asbestos but analysts can demonstrate general TEM asbestos competence by producing results within the published limits of this, the only recognized TEM asbestos counting standard, SRM.)		
Other Quality Control Measures – TEM – Air				
1030	D.6.3.1.2.a	Are filter preparations made from all six asbestos types in accordance		

No	Reference	Question	Y-N-N/A	Comments
		with Section D.6.3.1.1.a?		
1031	D.6.3.1.2.b	Is NIST SRM 1876b analyzed annually in accordance with Section D.6.3.1.1.b?		
Other Quality Control Measures – TEM – Bulk Samples				
1032	D.6.3.1.3	Are all analysts able to correctly identify the six regulated asbestos types (chrysotile, amosite, crocidolite, anthophyllite, actinolite, and tremolite)?		
Other Quality Control Measures – Phase Contrast Microscopy				
1033	D.6.3.2.a	Are blind recounts by the same analyst performed on 10% of the filters counted?		
1034	D.6.3.2.a	Does a person other than the counter re-label slides before the second count? (Recommendation)		
1035	D.6.3.2.a	Is a test for type II error performed to determine whether a pair of counts by the same analyst on the same slide should be rejected due to non-random fiber distribution?		
1036	D.6.3.2.a	If a pair of counts is rejected by this test, are the remaining samples in the set recounted and the new counts tested against first counts? Are all rejected paired counts discarded?		
1037	D.6.3.2.b	Have all individuals performing airborne fiber analysis taken the NIOSH Fiber Counting Course for sampling and evaluating airborne asbestos dust or an equivalent course?		
1038	D.6.3.2.c	Has the laboratory participated in a national sample testing scheme such as the Proficiency Analytical Testing (PAT) program or the Asbestos Analysts Registry (AAR) program, both sponsored by the American Industrial Hygiene Association (AIHA), or equivalent?		
Other Quality Control Measures – Polarized Light Microscopy				
1039	D.6.3.3.a	(Friable Materials) For at least 1 out of 100 sample, has a reference sample been routinely resubmitted to determine analyst's precision and accuracy?		
1040	D.6.3.3.a	Are these reference samples accumulated from proficiency testing samples with predetermined weight compositions or from standards generated with weighed quantities of asbestos and other bulk materials? (Recommendation)		
1041	D.6.3.3.a	Do at least half of the reference samples submitted for this QC contain between 1 and 10% asbestos?		
1042	D.6.3.3.b	(Non-Friable Materials) – For at least 1 out of 100 samples, has a verified quantitative standard been routinely submitted to determine analyst precision and accuracy?		

No	Reference	Question	Y-N-N/A	Comments
		Method Evaluation		
1043	D.6.4.a	Is a Demonstration of Capability performed initially (prior to the analysis of any samples) and with a significant change in instrument type, personnel, or method?		
1044	D.6.4.b	Are the results of Performance Audits (Section 5.4.2.j, 5.5.3.4) used by the laboratory to evaluate the ability of the laboratory to produce accurate data?		
		Asbestos Calibration – TEM – Water and Wastewater		
1045	D.6.5.1.1	Are all calibrations in 6.5.1.1 performed under the same analytical conditions used for routine asbestos analysis?		
1046	D.6.5.1.1	Are all calibrations recorded in a notebook and include date and analyst's signature?		
1047	D.6.5.1.1.a	Is magnification calibration done at the fluorescent screen, with the calibration specimen at the eucentric position, at the magnification used for fiber counting, generally ≥10,000x for water and ≥15,000x for air?		
1048	D.6.5.1.1.a	Is a logbook maintained with the dates of the calibration recorded?		
1049	D.6.5.1.1.a	Are calibrations performed monthly to establish the stability of magnification? Note: Frequencies stated below may be reduced to "before next use" if no samples are analyzed after the last calibration period has expired. Likewise, frequencies may have to be increased following non-routine maintenance or unacceptable calibration performance.		
1050	D.6.5.1.1.a	Is magnification calibration data displayed on control charts that show trends over time?		
1051	D.6.5.1.1.b	Is the camera length calibrated before SAED patterns of unknown samples are observed?		
1052	D.6.5.1.1.b	Is the diffraction specimen at the eucentric position for this calibration?		
1053	D.6.5.1.1.b	Does this calibration allow accurate (< 10% variation) measurement of layer line spacings on the medium used for routine measurement, i.e., the phosphor screen or camera film?		
1054	D.6.5.1.1.b	Does this calibration also allow accurate (< 5% variation) measurement of zone axis SAED patterns on permanent media, e.g., film?		
1055	D.6.5.1.1.b	Are calibrations performed monthly to establish the stability of the camera constant?		
1056	D.6.5.1.1.b	Where non-asbestiform minerals may be expected (e.g., winchite, richterite, industrial talc, vermiculite, etc.), is an internal camera		

No	Reference	Question	Y-N-N/A	Comments
		constant standard such as gold, deposited and measured on each sample to facilitate accurate indexing of zone axis SAED patterns?		
1057	D.6.5.1.1.b	Where non-asbestiform minerals may be expected, are other diffraction measurements used, in addition to, layer line analysis?		
1058	D.6.5.1.1.b	Is calibration data displayed on control charts that show trends over time?		
1059	D.6.5.1.1.c	(Spot Size) Is the diameter of the smallest beam spot at crossover less than 250 nm as calibrated quarterly?		
1060	D.6.5.1.1.c	Is spot size calibration data displayed on control charts that show trends over time?		
1061	D.6.5.1.1.d	(Beam Dose) Is the beam dose calibrated so that beam damage to chrysotile is minimized?		
1062	D.6.5.1.1.d	Is beam dose minimized so that an electron diffraction pattern from a single fibril >1 µm in length from a NIST SRM chrysotile sample stable in the electron beam dose for at least 15 seconds?		
1063	D.6.5.1.1.e.1	(EDXA System) Is the x-ray energy vs. channel number for the EDXA system calibrated to within 20 eV for at least two peaks between 0.7 keV and 10 keV?		
1064	D.6.5.1.1.e.1	Is one peak from the low end (0.7 keV to 2 keV) and the other peak from the high end (7 keV to 10 keV) of this range?		
1065	D.6.5.1.1.e.1	Is the calibration of the x-ray energy checked prior to each analysis of samples and recalibrated if out of the specified range?		
1066	D.6.5.1.1.e.2	Is the ability of the system to resolve the Na Ka line from the Cu L line confirmed quarterly by obtaining a spectrum from the NIST SRM 1866 crocidolite sample on a copper grid?		
1067	D.6.5.1.1.e.3	Are the k-factors for elements found in asbestos (Na, Mg, Al, Si, Ca, and Fe) relative to Si calibrated semiannually, or anytime the detector geometry may be altered?		
1068	D.6.5.1.1.e.3	Is NIST SRM 2063a used for Mg, Si, Ca, and Fe?		
1069	D.6.5.1.1.e.3	Are k-factors for Na and Al obtained from suitable materials such as albite, kaersutite, or NIST SRM 99a?		
1070	D.6.5.1.1.e.3	Are the k-factors determined to a precision (2s) within 10% relative to the mean value obtained for Mg, Al, Si, Ca, and Fe, and within 20% relative to the mean value obtained for Na?		
1071	D.6.5.1.1.e.3	Is the k-factor relative to Si for Na between 1.0 and 4.0, for Mg and Fe between 1.0 and 2.0, and for Al and Ca between 1.0 and 1.75?		
1072	D.6.5.1.1.e.3	Is the k-factor for Mg relative to Fe 1.5 or less?		

No	Reference	Question	Y-N-N/A	Comments
1073	D.6.5.1.1.e.3	Is k-factor calibration data displayed on control charts that show trends over time?		
1074	D.6.5.1.1.e.4	Is the detector resolution checked quarterly to ensure a full-width half maximum resolution of < 175 eV at Mn Ka (5.90 keV)?		
1075	D.6.5.1.1.e.4	Is calibration data displayed on control charts that show trends over time?		
1076	D.6.5.1.1.e.5	Are the portions of a grid in a specimen holder for which abnormal x-ray spectra might be generated under routine asbestos analysis conditions determined?		
1077	D.6.5.1.1.e.5	Are the portions of a grid in a specimen holder for which abnormal x-ray spectra might be generated avoided in asbestos analysis?		
1078	D.6.5.1.1.e.6	Is the sensitivity of the detector for collecting x-rays from small volumes documented quarterly by collecting resolvable Mg and Si peaks from a unit fibril of NIST SRM 1866 chrysotile?		
1079	D.6.5.1.1.f	(Low Temperature Asher) Is the low temperature asher calibrated quarterly by determining a calibration curve for the weight vs. ashing time of collapsed mixed cellulose- ester (MCE) filters?		
1080	D.6.5.1.1.f	Is asher calibration data displayed on control charts that show trends over time?		
1081	D.6.5.1.1.g	(Grid Openings) Is the magnification of the grid opening measurement system calibrated using an appropriate standard at a frequency of 20 openings/20 grids/lot of 1000 or 1 opening/sample?		
1082	D.6.5.1.1.g	Is the variation in the calibration measurements (2s)		
Asbestos Calibration – TEM – Air				
1083	D.6.5.1.2	Are all calibrations performed in accordance with Section D.6.5.1.1, with the exception of magnification?		
1084	D.6.5.1.2	Is magnification calibration done at the fluorescent screen, with the calibration specimen at the eucentric position, at the magnification used for fiber counting, generally 15,000 to 20,000x (AHERA, III.G.1.c)?		
1085	D.6.5.1.2	Is a logbook maintained with the dates of the calibration recorded?		
1086	D.6.5.1.2	Are calibrations performed monthly to establish the stability of magnification?		
Asbestos Calibration – TEM – Bulk Samples				
1087	D.6.5.1.3	Are all calibrations performed in accordance with Section D.6.5.1.2?		
Asbestos Calibration – Phase Contrast Microscopy				
1088	D.6.5.2.a	Does the analyst use the telescope ocular (or Bertrand lens, for some		

No	Reference	Question	Y-N-N/A	Comments
		microscopes) supplied by the manufacturer to ensure that the phase rings (annular diaphragm and phase-shifting elements) are concentric at least once daily?		
1089	D.6.5.2.b	Is the phase-shift limit of detection the microscope checked monthly or after modification or relocation using an HSE/NPL phase-contrast test slide for each analyst/microscope combination?		
1090	D.6.5.2.c	Prior to ordering the Walton-Beckett graticule, is calibration performed to obtain a counting area 100 µm in diameter at the image plane of the microscope?		
1091	D.6.5.2.c	Is the field diameter checked to a tolerance of 100+/- 2 um with a stage micrometer upon receipt of the graticule from the manufacturer?		
1092	D.6.5.2.c	When changes (zoom adjustment, disassembly, replacement, etc.) occur in the eyepiece-objective-reticule combination, is the field diameter re-measured (or re-calibrated) to determine field area (mm^2)?		
1093	D.6.5.2.c	Is re-calibration of field diameter also done when there is a change in interpupillary distance (i.e., change in analyst)?		
1094	D.6.5.2.c	Is the acceptable range for field area 0.00754 mm2 to 0.00817 mm^2 for all analyses?		
1095	D.6.5.2.c	Is the actual field area documented and used?		
Asbestos Calibration – Polarized Light Microscopy				
1096	D.6.5.3.a	(Microscope Alignment) Is a properly aligned polarized light microscope (PLM) utilized to accurately measure the required optical properties?		
1097	D.6.5.3.a	Is the PLM aligned before each use in accordance with EPA/600/R-93-116?		
1098	D.6.5.3.b	Does the laboratory have and use the full series of Refractive Index Liquids - Series of nD = 1.49 through 1.72 in intervals less than or equal to 0.005; and Refractive index liquids for dispersion staining, high-dispersion series 1.550, 1.605, 1.680?		
1099	D.6.5.3.b	Are these liquids Refractive Index Liquids calibrated at first use and semiannually, or next use, whichever is less frequent, to an accuracy of 0.004, with a temperature accuracy of 2°C using a refractometer or RI glass beads?		
Analytical Sensitivity – TEM – Water and Wastewater				
1100	D.6.6.1.1	Is an analytical sensitivity (one structure) of 200,000 fibers per liter (0.2 MFL) required for each sample analyzed?		
Analytical Sensitivity – TEM – Air				

No	Reference	Question	Y-N-N/A	Comments
1101	D.6.6.1.2	Is an analytical sensitivity of 0.005 structures/cm² required for each sample analyzed?		
Analytical Sensitivity – TEM – Bulk Samples				
1102	D.6.6.1.3.b	Is there an error rate of less than 1% on the qualitative analysis for samples that contain chrysotile, amosite, and crocidolite? (A slightly higher error rate may occur for samples that contain anthophyllite, actinolite, and tremolite, as it can be difficult to distinguish among the three types)? (Recommendation)		
Analytical Sensitivity – Phase Contrast Microscopy				
1103	D.6.6.2	Does the laboratory use a normal quantitation working range of 0.04-0.5 fibers/cm² for a 1000-L air sample, with the ideal counting range on the filter of 100-1300 fibers/mm²?		
1104	D.6.6.2	Is the Limit of Detection < 0.01 fibers/cm² for atmospheres free of interferences?		
Analytical Sensitivity – Polarized Light Microscopy				
1105	D.6.6.3	For PLM, does the laboratory utilize a test method that provides a detection limit appropriate and relevant for the intended use of the data?		
1106	D.6.6.3	For PLM does the laboratory determine detection limits by the protocol in the test method or applicable regulation?		
Data Reduction – TEM – Water and Wastewater				
1107	D.6.7.1.1.a	Is the concentration of asbestos in a given sample calculated in accordance with EPA /600/R-94/134, Method 100.2, Section 12.1?		
Data Reduction – TEM – Air				
1108	D.6.7.1.2.a	Is the concentration of asbestos in a given sample calculated in accordance with the method utilized?		
1109	D.6.7.1.2.b	(Measurement Uncertainties) Does the laboratory calculate and report the upper and lower 95% confidence limits on the mean concentration of asbestos fibers found in the sample?		
Data Reduction – TEM – Bulk Samples				
1110	D.6.7.1.3.a	Is the concentration of asbestos in a given sample calculated in accordance with the method utilized?		
Data Reduction – Phase Contrast Microscopy				
1111	D.6.7.2.a	Is airborne fiber concentration in a given sample calculated in accordance with NIOSH 7400, Issue 2, 15 August 1994, Sections 20 and 21?		
1112	D.6.7.2.b	Does the laboratory calculate and report intra-laboratory and inter-		

No	Reference	Question	Y-N-N/A	Comments
		laboratory standard deviations with each set of results?		
1113	D.6.7.2.c	Are fiber counts above 1300 fibers/mm² and fiber counts from samples with >50% of the filter area covered with particulate reported as "uncountable" or "probably biased"? (Recommendation)		
Data Reduction – Polarized Light Microscopy				
1114	D.6.7.3.a	Is the concentration of asbestos in a given sample calculated in accordance with the method utilized?		
1115	D.6.7.3.b	(Method Uncertainties) Is precision and accuracy determined by the laboratory for the percent range involved?		
1116	D.6.7.3.b	If point counting and/or visual estimates are used, is a table of reasonable expanded errors generated for different concentrations of asbestos? (Recommendation)		
Quality of Standards and Reagents - TEM				
1117	D.6.8.1.a	Does the quality control program establish and maintain provisions for asbestos standards?		
1118	D.6.8.1.a.1	Are the reference standards used obtained from NIST, EPA, or suppliers who participate in supplying NIST standards or NIST traceable asbestos?		
1119	D.6.8.1.a.1	Are any reference standards purchased outside the United States traceable back to each country's national standards laboratory?		
1120	D.6.8.1.a.1	Do commercial suppliers of reference standards conform to ANSI N42.22 to assure the quality of their products?		
1121	D.6.8.1.a.2	Are reference standards accompanied with a certificate of calibration whose content is as described in ANSI N42.22-1995, Section 8, Certificates?		
1122	D.6.8.1.b	Are all reagents used analytical reagent grade or better?		
1123	D.6.8.1.c	Does the laboratory have mineral fibers or data from mineral fibers that will allow differentiating asbestos from at least the following "look-alikes": fibrous talc, sepiolite, wollastonite, attapulgite (palygorskite), halloysite, vermiculite scrolls, antigorite, lizardite, pyroxenes, hornblende, richterite, winchite, or any other asbestiform minerals that are suspected as being present in the sample?		
Quality of Standards and Reagents – Phase Contrast Microscopy				
1124	D.6.8.2	Since standards of known concentration have not been developed for this testing method, are routine workload samples that have been statistically validated and national proficiency testing samples (such as PAT and AAR samples available from the AIH) utilized as reference samples (refer to Section D.6.2.2b) to standardize the optical system		

No	Reference	Question	Y-N-N/A	Comments
		and analyst? (Recommendation)		
1125	D.6.8.2	Do all other testing reagents and devices (HSE/NPL test slide and Walton-Beckett Graticule) conform to the specifications of the method?		
Constant and Consistent Test Conditions				
1126	D.6.9	Has the laboratory written procedures to minimize the possibility of cross-contamination between samples?		